GLASSRENU TECHNICAL REFERENCE

Damage Specification Standards

Classification reference publication

150 source-based specifications

10 physical-condition families

150 printable US Letter classification one-sheets

PUBLICATION 1.0 | 2026-10-21

Classification reference only. This publication does not prescribe a restoration method, promise repairability, establish structural suitability, or replace qualified inspection.

glassrenu.com/learning-center/resource-center/damage-specification-standards/

Table of contents

Entries are organized by the DSS family and code shown on each classification one-sheet. PDF bookmarks provide direct digital navigation.

P - Processing / Manufacturing Features

DSS-P.01.01 Roller Wave (Periodic Flatness Deviation) ... 4

DSS-P.01.02 Bow / Warp (global shape) ... 5

DSS-P.01.03 Quench / Anisotropy Patterning (polarization-visible) ... 6

DSS-P.01.04 Roller Pickup / “Line Ghost” (pyrolytic line pattern) ... 7

DSS-P.01.05 Edge Kink / Localized Warp ... 8

DSS-P.02.01 Tin-Side Haze / Surface “Side” Effects ... 9

DSS-P.02.02 Seeds / Blisters (entrapped gas) ... 10

DSS-P.02.03 Stones / Knots (solid inclusions) ... 11

DSS-P.02.04 Ream / Cord / Striae (optical inhomogeneity) ... 12

DSS-P.02.05 Draw / Float Swirl (optical patterning) ... 13

DSS-P.03.01 Seamed / Arris Edge Texture (as-processed edge finish) ... 14

DSS-P.03.02 Edge Grind / Polish Pattern (factory) ... 15

DSS-P.03.03 Cutting Skid Lines (factory micro-lines) ... 16

DSS-P.03.04 Drill/Slot “Exit Lip” (acceptable edge artifact) ... 17

DSS-P.03.05 Patterned / Textured Glass Relief (design) ... 18

DSS-P.04.01 Ceramic Frit Pattern Boundaries (design) ... 19

DSS-P.04.02 Laminated Interlayer Pattern / Print (design) ... 20

DSS-P.04.03 Spandrel Opacity Variation (system tolerance) ... 21

DSS-P.04.04 Curved/Bent Glass Local Thickness / Thinning Signatures ... 22

A - Assembly / Internal Conditions

DSS-A.01.01 Internal Haze / Volatile Fogging (#2 / #3) ... 23

DSS-A.01.02 Moisture / Condensation Between Panes (#2 / #3) ... 24

DSS-A.01.03 Desiccant Dust / Fines in IGU Cavity ... 25

DSS-A.01.05 Low-E / Functional-Coating Appearance Change Inside Cavity (#2 / #3) ... 26

DSS-A.01.06 Breather / Altitude-Tube Staining Pattern (#2 / #3) ... 27

DSS-A.02.01 Edge haze / whitening (laminated interlayer; PVB / ionoplast) ... 28

DSS-A.02.02 Bubbles / Stringers (entrapped gas/voids in laminated interlayer) ... 29

DSS-A.02.03 Contamination Inclusions (foreign matter within laminated interlayer) ... 30

DSS-A.02.04 Interlayer Creep / Exudation at Edge ... 31

DSS-A.02.05 Interlayer Discoloration / Yellowing (UV/thermal aging; laminated interlayer) ... 32

DSS-A.02.06 Local Delamination (ply/interlayer separation; laminated glass) ... 33

DSS-A.03.01 Mirror Edge Blackening (back-coating corrosion) ... 34

DSS-A.03.02 Spot Corrosion Behind Mirror (localized back-coating failure) ... 35

DSS-A.03.03 Adhesive / Chemical Attack from Behind (mirror back-coating) ... 36

DSS-A.04.01 Black Spots / Voids in Active Layer (PDLC / EC; switchable glazing) ... 37

DSS-A.04.02 Busbar / Lead Defects Visible Through Lite (PDLC / EC; switchable glazing) ... 38

Co - Coatings / Applied Films / Decoration

DSS-Co.01.01 Abrasion Sheen Shift / Rub Marks (sputtered low-E & multilayer films) ... 39

DSS-Co.01.02 Color Non-Uniformity / Patchiness (sputtered low-E & multilayer films) ... 40

DSS-Co.01.03 Pinholes / Islands (localized coating loss; sputtered low-E & multilayer films) ... 41

DSS-Co.01.04 Chemical Attack Spots (cleaner/acid/alkali on sputtered stacks) ... 42

DSS-Co.02.01 Roller Pickup / Line Ghosting (Pyrolytic Line) ... 43

DSS-Co.02.02 Surface Rub / Scuff (Pyrolytic Hard-Coat Appearance Change) ... 44

DSS-Co.02.03 Local Coating Discontinuity (Pyrolytic Hard-Coat) ... 45

DSS-Co.03.01 AR Bloom / Scuff (Anti-Reflective & Other Optical Films) ... 46

DSS-Co.03.02 Hard-Coat Micro-Mottle (Other Functional Films) ... 47

DSS-Co.04.01 Mottle / Cloudiness (Spandrel & Back-Paint Systems) ... 48

DSS-Co.04.02 Pinholes / Holidays (Spandrel & Back-Paint Systems) ... 49

DSS-Co.04.03 Back-Paint Adhesion Loss Islands ... 50

DSS-Co.05.01 Frit Smears / Offset ... 51

DSS-Co.05.02 Pinholes / Voids (Ceramic Frit) ... 52

DSS-Co.05.03 Frit Over-Spray / Edge Ghost ... 53

M - Mechanical Damage

DSS-M.01.01 Scraper/Razor Scoring ... 54

DSS-M.01.02 Straightedge / Metal-Guide Scoring ... 55

DSS-M.01.03 Glass-on-Glass Track (paired arcs/lines) ... 56

DSS-M.01.04 Conveyor/Belt Line Scoring (handling line) ... 57

DSS-M.01.05 Hardware / Fastener Drag Line ... 58

DSS-M.02.01 Micro-Abrasion Swirls / Pad Trails (non-linear) ... 59

DSS-M.02.02 Cross-Hatch Scuffing / Sanding Pattern (non-linear) ... 60

DSS-M.02.03 Directional Webbing (repetitive paths) ... 61

DSS-M.02.04 Burnish / Haze Field (localized over-polish) ... 62

DSS-M.02.05 Squeegee Burn Lines (Friction Film) ... 63

DSS-M.03.01 Edge Micro-Chipping (minor) ... 64

DSS-M.03.02 Edge Gross Chipping / “Clamshell” ... 65

DSS-M.03.03 Corner Crush / Corner Spall ... 66

DSS-M.03.04 Edge “Shelling” at Hardware Holes/Slots ... 67

DSS-M.04.01 Impact Divot (non-through) ... 68

DSS-M.04.02 Star Break / Bullseye Initiation (annealed/laminated) ... 69

DSS-M.04.03 Pellet / BB Impact Signature ... 70

DSS-M.04.04 Tool Strike / Ladder Foot Imprint ... 71

DSS-M.04.05 Hardware Contact Rub (spider/rail fittings) ... 72

DSS-M.05.01 Short FD Scratch Cluster ... 73

DSS-M.05.02 Long FD Scratch Field ... 74

DSS-M.05.03 Wash-Line Scratch Bands ... 75

DSS-M.06.01 Hole Edge Micro-Chips (excess) ... 76

DSS-M.06.02 Notch Root Micro-Cracks ... 77

DSS-M.07.01 Edge-Origin Stress Crack (chip origin) ... 78

DSS-M.07.02 Through-Thickness Crack Propagation ... 79

DSS-M.07.03 Fragmentation Pattern (tempered fracture documentation) ... 80

Th - Thermal Damage

DSS-Th.01.01 Welding Slag Spatter (fused nodules/pits) ... 81

DSS-Th.01.02 Grinder Spark Embed (ferrous peppering) ... 82

DSS-Th.01.03 Oxy-Fuel / Plasma Specking ... 83

DSS-Th.02.01 Torch Proximity Streaking (Heat Skid / Thermal Streaks) ... 84

DSS-Th.02.02 Overheated Grinder/Belt Burn Line ... 85

DSS-Th.03.01 Differential Heating Stress Crack (edge origin) ... 86

DSS-Th.03.02 Spontaneous Tempered Break (NiS-related; documentation) ... 87

DSS-Th.03.03 Local Heat Source Imprint (heaters / IR) ... 88

DSS-Th.04.01 Localized Thermal “Hot Spot” Imprint (Solar Concentration / Reflective Interactions) ... 89

Ch - Chemical Damage

DSS-Ch.01.01 Acid-Etch Graffiti (HF / BOE) ... 90

DSS-Ch.01.02 Muriatic / Brick-Wash Fallout (HCl) ... 91

DSS-Ch.01.03 Organic-Acid Residues (avian/biogenic high acidity) ... 92

DSS-Ch.02.01 Cement / Mortar Slurry Etch (high pH) ... 93

DSS-Ch.02.02 Concrete Splash / Run-Off Etch Pattern ... 94

DSS-Ch.02.03 Efflorescence-Associated Surface Attack ... 95

DSS-Ch.03.01 Mineral Deposits (removable) ... 96

DSS-Ch.03.02 Mineral Staining (persistent film/discoloration, non-etch) ... 97

DSS-Ch.03.03 Mineral Etching (subsurface micro-texture) ... 98

DSS-Ch.04.01 Paint Remover / Solvent Bloom (matting / sheen loss) ... 99

DSS-Ch.04.02 Adhesive Remover Staining Pattern ... 100

DSS-Ch.04.03 Degreaser / Alkaline Cleaner “Burn” ... 101

DSS-Ch.05.01 Bleach / Peroxide Shadowing ... 102

DSS-Ch.05.02 Reducing Agent Discoloration ... 103

DSS-Ch.06.01 Silane / Siloxane Migration Halo ... 104

DSS-Ch.06.02 Hydrophobic Coating Mismatch Halo ... 105

DSS-Ch.06.03 Anti-Graffiti Coating Ghost (chemically altered) ... 106

R - Residues / Deposits / Transfer

DSS-R.01.01 Silicone Smear / Tool-Mark Film ... 107

DSS-R.01.02 Butyl / PIB / IG Sealant Smear ... 108

DSS-R.01.03 Polysulfide / Polyurethane Smear ... 109

DSS-R.01.04 Mastic / Bitumen / Tar Transfer ... 110

DSS-R.01.05 Adhesive Label / Sticker Ghost ... 111

DSS-R.01.06 Protective Film Adhesive Residue (aged) ... 112

DSS-R.02.01 Paint Overspray Film ... 113

DSS-R.02.02 Drywall Mud / Plaster Film ... 114

DSS-R.02.03 Stucco / Lime Film (residue) ... 115

DSS-R.03.01 Suction Cup Rings (residue / pressure mark) ... 116

DSS-R.03.02 Separator Pad Ghost / “Waffle” Print ... 117

DSS-R.03.03 Roller / Handling Rail Transfer ... 118

DSS-R.04.01 Detergent / Surfactant Film ... 119

DSS-R.04.02 Fabric Softener / Cleaner Additive Film ... 120

DSS-R.04.03 HVAC Aerosol / Oil Film ... 121

DSS-R.04.04 Kitchen Grease / Aerosol Film ... 122

DSS-R.04.05 Nicotine / Tar Film ... 123

DSS-R.05.01 EPDM Gasket Black Rub ... 124

DSS-R.05.02 PVC Plasticizer Smear / Migration Film ... 125

DSS-R.05.03 Neoprene Roller Transfer ... 126

DSS-R.06.01 Aluminum Rub / Grey Smear ... 127

DSS-R.06.02 Steel / Ferrous Rub / Black Smear ... 128

E - Environmental / Exposure Conditions

DSS-E.01.01 Salt-Spray Crystals / Shoreline Frosting ... 129

DSS-E.01.02 Atmospheric Corrosion Matte (SOx/NOx / “Acid Rain”) ... 130

DSS-E.01.03 Soot / Particulate Pollution Film ... 131

DSS-E.01.04 Condensation / Runoff Patterns ... 132

DSS-E.02.01 Wind-Borne Sand Abrasion (Eolian) ... 133

DSS-E.02.02 Dust-Storm Micro-Pitting ... 134

DSS-E.03.01 Algae / Biofouling Film ... 135

DSS-E.03.02 Lichens / Moss (Rough Adhesion) ... 136

DSS-E.03.03 Tree Sap / Organic Exudate Shadow ... 137

DSS-E.03.04 Avian Residue Acid Shadow ... 138

DSS-E.04.01 Recurring Drip / Run Staining Pattern ... 139

DSS-E.04.03 Curtain Wall Runoff Staining (Adjacent Materials Interactions) ... 140

DSS-E.05.01 UV-Induced Browning / Yellowing of Residues ... 141

DSS-E.05.02 Oxidation Darkening of Films ... 142

V - Vandalism

DSS-V.01.01 Sandblast / Abrasive-Blast Etch (Uniform Frosted Field) ... 143

DSS-V.01.02 Scribed / Engraved Tool Marks ... 144

DSS-V.02.01 Acid-Marker Tagging (HF-Bearing) ... 145

DSS-V.02.02 Etch-Cream Patterning (Consumer Etchant Traces) ... 146

DSS-V.03.01 Spray Paint / Marker Coatings ... 147

DSS-V.03.02 Sticker / Poster Adhesive Campaigns (Mass Adhesive Residue) ... 148

U - Unclassified / Mixed Conditions

DSS-U.01.01 Mixed Chemical–Mechanical Field (Etch + Track / Hybrid Presentation) ... 149

DSS-U.01.02 Modeled Micro-Texture with Embedded Particulates (Uncertain Chemistry) ... 150

DSS-U.01.03 Halo without Central Feature (Unknown Chemistry) ... 151

DSS-U.01.04 Directional Patterning with Intermittent Chip Flanks (Uncertain Tool/Pad) ... 152

DSS-U.01.05 Non-Directional Milky Field, Low Contrast (Undetermined) ... 153

DSS-P.01.01 | Processing / Manufacturing Features

Roller Wave (Periodic Flatness Deviation)

Processing / Manufacturing Feature - reference; generally not damage

Diagnosis summary

A periodic flatness deviation characteristic of heat-treated flat glass that appears as bands/undulations in reflection or transmission. It is a factory feature of the product, not a field-induced surface relief defect. For measurement background on optical/roll-wave distortion in heat-treated flat glass, see ASTM C1651 (informative reference noted in VIS).

Field identification cues

- Surface catch (MSRT): none (PVΔ as “damage” ≈ 0 at the surface). Perform one light non-marring pass only to confirm absence of relief.
- Morphology: global/periodic flatness effect; no chip flanks, no pits, no modeled micro-texture.
- Visibility geometry: evaluate under VIS Section 5-raking/low-angle light as needed, with 12/36/72 in distances and normal + oblique sweep.

Classification, severity and scope

- Not field damage. Do not classify as CAT-1...CAT-4.

Distinguishing criteria

- Versus micro-abrasion / pad trails (M.02.01): abrasion presents localized haze or directional swirls and may show slight catch; roller wave is global/periodic and non-tactile.
- Versus over-polish/burnish (M.02.04): burnish is a localized appearance change (often directional) and may show a transition edge; roller wave has no transition edge and extends broadly.
- Versus modeled micro-texture (chemical etch): chemical etch shows non-linear micro-texture strongest in raking light and can exhibit slight/clear catch at severity; roller wave remains.

Documentation and inspection

- Photo set at 12 / 36 / 72 in under VIS geometry; include one frame with straight-line reflection (string line, mullion, horizon) to show periodicity. Note MSRT = none.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-01-01-roller-wave-periodic-flatness-deviation/

DSS-P.01.02 | Processing / Manufacturing Features

Bow / Warp (global shape)

Processing / Manufacturing feature - reference; generally not “damage”

Diagnosis summary

A pane-scale departure from nominal flatness that manifests as gentle, global curvature (bow) or more complex global shape (warp). It alters the way straight lines reflect or transmit across the entire lite but does not present as localized surface relief at the exposed surface. Use of raking/oblique views and the VIS viewing geometry is for observation only;

Field identification cues

- Surface-catch class:
- SC-0 (none). A single light pass of the Manual Surface-Relief Test should not detect a tactile interruption because the condition is pane-scale shape, not a local relief feature.
- Visual signature:
- Uniform, directionless bending of reflected/transmitted lines at normal and oblique sweep; no “transition edge” or localized boundary.

Classification, severity and scope

- Because bow/warp is a pane-scale shape with SC-0 and no local morphology, it is not a surface-damage category in VIS-DA (§4).

Distinguishing criteria

- vs.

Documentation and inspection

- Capture per VIS conventions to avoid hyper-scrutiny and to keep records consistent across trades:
- Photo set at VIS geometry: 12 in, 36 in, 72 in at normal and oblique sweep; include a straight reference (ruler/edge) in frame when practical; log distance/angle in frame.
- Time discipline: Observe per pane-size time limits from VIS quick card (apply once per distance).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-01-02-bow-warp-global-shape/

DSS-P.01.03 | Processing / Manufacturing Features

Quench / Anisotropy Patterning (polarization-visible)

Processing / Manufacturing feature - reference; generally not “damage”

Diagnosis summary

A spatial variation in optical response (anisotropy) characteristic of heat-treated glass caused by non-uniform cooling in the quench. It presents as bands, mottling, or “zebra/leopard” tonal shifts that are most evident in reflection/transmission at oblique angles and may be accentuated by polarized viewing. It is a factory feature of the product-not a localized surface-relief defect.

Field identification cues

- Surface-catch class (MSRT):
- SC-0 (none). Perform one light, non-marring pass only to confirm no tactile relief; do not abrade or repeat passes.
- Visual signature:
- Pane-scale mottle/banding without a transition edge; no chip flanks, no pits/craters, no modeled micro-texture typical of chemical etch. Evaluate at 12/36/72 in with normal + oblique sweep under VIS lighting.

Classification, severity and scope

- Not field damage. Quench/anisotropy is a processing/optical feature and is not categorized as CAT-1...CAT-4.

Distinguishing criteria

- vs. Roller wave (P.01.01): Roller wave shows periodic banding (short wavelength) tied to roll contact; anisotropy can be mottled/banded but is polarization-sensitive and not periodic.
- vs. Bow/warp (P.01.02): Bow/warp is global shape (straight lines bend smoothly); anisotropy is optical mottle/banding without uniform curvature. Both lack transition edges and surface catch.
- vs. Low-E coating rub/patchiness (Co.01.02): Coating rub produces localized sheen/color shifts and can create a worked boundary or directional scuffs.

Documentation and inspection

- Photo set at VIS geometry: 12 / 36 / 72 in, normal + oblique; include a straight-line reflection (mullion/string line) where practical; note whether raking was used.
- MSRT result: Record SC-0; one pass only; no abrasion.
- Forms: Pane ID; surface numbering (#1-#4; laminate-internal); coating present Y/N/Unknown; non-invasive reveal completed (Y/N); lighting notes/time.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-01-03-quench-anisotropy-patterning-polarization-visible/

Damage Specification Standards
Printable classification one-sheet

DSS-P.01.04 | Processing / Manufacturing Features

Roller Pickup / “Line Ghost” (pyrolytic line pattern)

Processing / Manufacturing feature - reference; generally not “damage”

Diagnosis summary

A linear appearance feature associated with pyrolytic (hard-coat) deposition on the float line, observed as faint, conveyor-parallel lines or “ghosts” that repeat across a lite. It is a factory/processing signature of the coating run, not a localized surface-relief defect. For coating product context see the VIS normative references list (ASTM C1376).

Field identification cues

- Surface-catch class (MSRT):
- SC-0 (none). Perform one light, non-marring pass only; do not abrade or repeat passes.
- Morphology:
- Pane-scale linear appearance without chip flanks/pits; no transition edge typical of worked regions.

Classification, severity and scope

- Not field damage When observation confirms SC-0 with conveyor-parallel, pane-scale lines and no local relief/morphology, record: “Processing Feature - Not Surface Damage (outside CAT-1...CAT-4).”
- If the pattern is confirmed inside an IGU cavity (fixed parallax), record CAT-5 (out of in-place scope by location) and refer per project protocol.

Distinguishing criteria

- vs. Scraper/razor scoring (M.01.01): Scoring shows clear surface catch and often bright chip flanks under raking light; roller pickup is non-tactile and lacks fracture flanks.
- vs.
- vs. Micro-abrasion swirls (M.02.01): Swirls appear curvilinear/cross-hatched and can show slight catch; roller pickup remains straight, parallel, SC-0.

Documentation and inspection

- Photo set per VIS: capture at 12 / 36 / 72 in, normal + oblique; include a straight reference (mullion/string line) when practical to emphasize parallelism; note if raking.
- MSRT result: Record SC-0 (none); one pass only; non-marring.
- Forms: Pane ID, surface numbering (#1-#4; laminate-internal), coating present on worked surface? (Y/N/Unknown), reveal status, lighting notes/time.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-01-04-roller-pickup-line-ghost-pyrolytic-line-pattern/

DSS-P.01.05 | Processing / Manufacturing Features

Edge Kink / Localized Warp

Processing / Manufacturing feature - reference; generally not “damage”

Diagnosis summary

A localized departure from flatness concentrated near an edge or corner of a lite-commonly a small “kink” or short-wavelength warp attributable to manufacturing/handling processes (e.g., heat-treat cooling, conveyor/edge support, post-process handling). It alters straight-line reflections/transmission near the edge zone but does not present as a discrete surface-relief defect at the exposed surface.

Field identification cues

- Surface-catch class (MSRT):
- SC-0 (none). Make one light, non-marring pass; no tactile interruption should be felt because this is shape, not local relief. Do not repeat/abrade.
- Morphology:
- Localized flatness/shape deviation near edge; no chip flanks, pits, or modeled micro-texture. Classification remains observation-based; do not confuse with edge chipping (see M.03).

Classification, severity and scope

- Not field damage. When SC-0 and morphology indicate a shape feature (no local relief), record “Processing Feature - Not Surface Damage (outside CAT-1...CAT-4)”.
- If apparent distortion is determined to be inside an IGU cavity or otherwise inaccessible, document fixed parallax and record CAT-5 (out of in-place scope by location/condition).

Distinguishing criteria

- vs. Bow/Warp (P.01.02): Bow/warp is global curvature across the pane; edge kink is localized near the perimeter. Both are SC-0 and non-relief.
- vs. Roller Wave (P.01.01): Roller wave is periodic and often extends across the lite; edge kink is a short, non-periodic local bend. Both are factory shape features.
- vs. Edge micro-chipping / clamshell (M.03): Edge damage shows fracture morphology and, when accessible, may show clear catch; edge kink shows no catch and no fracture cues.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include a straight reference (string line/mullion/edge rule) skimming the affected perimeter to show local bend; note.
- MSRT: Record SC-0 (none); one pass only; non-marring.
- Forms: Pane ID; surface numbering (#1-#4; laminate-internal), product family, coating on worked surface? (Y/N/Unknown), reveal status, lighting notes/time.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-01-05-edge-kink-localized-warp/

DSS-P.02.01 | Processing / Manufacturing Features

Tin-Side Haze / Surface “Side” Effects

Float & raw glass feature - reference; generally not “damage”

Diagnosis summary

Subtle appearance differences between float-glass surfaces-commonly a faint haze/iridescence or slightly different “sheen” on the tin-side versus the air-side-arising from normal float manufacture. These are factory surface-side signatures, not field-induced surface-relief defects. Observe with VIS lighting and viewing geometry for consistency;

Field identification cues

- Surface-catch class (MSRT): SC-0 (none). Perform one light, non-marring pass per VIS §5.5; do not abrade or repeat passes. Tin-side haze is an appearance-side effect, not local relief.
- Visual signature: Uniform, non-directional variation in tone/shine; lacks directional patterning and transition edge.
- Viewing/lighting: Inspect at 12 / 36 / 72 in with normal incidence and oblique sweep (~60°-120°) under raking light.
- Location/access: Pertains to the exposed surface under evaluation; record surface numbering (#1-#4 / laminate-internal) when IGUs/laminates are present.

Classification, severity and scope

- Not field damage. If observation confirms SC-0 with pane-scale, non-directional side effect and no local morphology, record: “Processing Feature - Not Surface Damage (outside CAT-1...CAT-4).”
- If a look-alike cue is confirmed between panes (fixed parallax in an IGU) or otherwise inaccessible, classify as CAT-5 (out of in-place scope) by location/condition.

Distinguishing criteria

- vs. Micro-abrasion swirls (M.02.01): Abrasion presents directional or curvilinear texture and may read slight catch; tin-side haze is non-directional and SC-0.
- vs.

Documentation and inspection

- Photo set (VIS): Capture at 12 / 36 / 72 in, normal + oblique; include raking usage in notes; avoid filters that alter appearance.
- MSRT result: Record SC-0; one pass only; non-marring.
- Forms: Pane ID; surface numbering; worked surface Y/N; coating present on worked surface? (Y/N/Unknown); reveal status; lighting/time; inspection geometry.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-02-01-tin-side-haze-surface-side-effects/

DSS-P.02.02 | Processing / Manufacturing Features

Seeds / Blisters (entrapped gas)

Float & raw glass feature - reference; generally not “damage”

Diagnosis summary

Seeds/blisters are gas inclusions formed during melting/float manufacture, appearing as encapsulated bubbles within the glass body. When fully encapsulated, they are a manufacturing feature and not a surface-relief defect. Evaluate using VIS lighting and viewing geometry for observation consistency; product acceptance for factory inclusions is separate from post-restoration acceptance under VIS.

Field identification cues

- Surface-catch class (MSRT):
- Fully encapsulated seed/blister: SC-0 (none) - a single, light, non-marring pass detects no tactile relief because the feature is within the glass, not on the exposed surface. Do not abrade or repeat.
- Open blister / burst inclusion: If the bubble has broken to the surface, it will read as a local pit/crater and may present clear catch; classify by morphology (see CAT-3/4 cues; see “Pit / Crater” term).
- Visual signature:

Classification, severity and scope

- Encapsulated seed/blister (non-relief): Processing Feature - Not Surface Damage (outside CAT-1...CAT-4). Document and proceed per project specifications for factory inclusions.
- Open blister / surface pit: Classify by observable morphology and surface-catch (often CAT-3/4 depending on depth cues).
- Between-pane or inaccessible condition: If a look-alike defect is confirmed within IGU cavity (fixed parallax) or otherwise out of in-place scope, record CAT-5 and refer per project protocol.

Distinguishing criteria

- vs. Metallic/paint specks (Residues/Overspray): Residues typically clean/soften with reveal; encapsulated blisters do not.
- vs. Micro-abrasion “pepper”: Abrasion fields show directional patterning or webbing and may escalate to slight/clear catch; encapsulated seeds are isolated and SC-0.
- vs. Hot-particle pits (Th.01): Thermal pits often exhibit bright chip flanks and clear catch; encapsulated seeds do not. Classify thermal pits per M/Th families.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking usage; where practical, capture a fixed reference to demonstrate lack of boundary/working.
- MSRT: Record SC-0 for encapsulated features (one pass only; non-marring). If open, record SC-1/SC-2 accordingly.
- Forms: Pane ID; surface numbering; worked surface Y/N; coating present on worked surface? (Y/N/Unknown); reveal status; lighting/time.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-02-02-seeds-blisters-entrapped-gas/

DSS-P.02.03 | Processing / Manufacturing Features

Stones / Knots (solid inclusions)

Float & raw glass feature - reference; encapsulated = factory feature; “open” = classify by surface morphology

Diagnosis summary

Stones/knots are solid inclusions within the glass body (e.g., unmelted batch, refractory fragments) produced during glass manufacture. When fully encapsulated, they are manufacturing features (optical/appearance effects) rather than surface-relief defects. Evaluate with VIS lighting/geometry for consistency; product/factory acceptance is distinct from VIS post-restoration acceptance.

Field identification cues

- Surface-catch class (MSRT):
- Encapsulated stone/knott: SC-0 (none) - one light, non-marring pass finds no tactile relief (feature is subsurface). Do not abrade or repeat passes.
- Open (surface-breaking) stone: reads as local pit/crater; expect SC-1/SC-2 depending on depth/edge condition (see CAT-3/4 cues).
- Morphology / visual signature:

Classification, severity and scope

- Encapsulated stone/knott (non-relief): Processing Feature - Not Surface Damage (outside CAT-1...CAT-4); document only.
- Open (surface-breaking) stone: classify by observable morphology + surface-catch: often CAT-3 (clear catch; modeled texture/lines nearby) or CAT-4 if rough chip flanks/pits are prominent at.
- Between-pane/inaccessible look-alike: CAT-5 by location/condition; refer per project protocol.

Distinguishing criteria

- vs. Seeds/Blisters (P.02.02): Seeds are gas inclusions; when open, present as craters but often with smoother edges; encapsulated seeds also read SC-0.
- vs. Hot-particle peppering (Th.01): Thermal pits show bright chip flanks and often occur in clusters/fields; classify per CAT-3/4 morphology if present.
- vs. Metallic/paint specks (Residues/Overspray): Residues change with Non-Invasive Reveal; true inclusions do not.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking usage; where practical, capture a straight-line reflection to show absence of a worked perimeter.
- MSRT result: Encapsulated → SC-0; Open → SC-1/SC-2 (record). One pass only; non-marring.
- Forms: Pane ID; surface numbering; worked surface Y/N; coating present on worked surface? (Y/N/Unknown); reveal status; lighting/time.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-02-03-stones-knots-solid-inclusions/

DSS-P.02.04 | Processing / Manufacturing Features

Ream / Cord / Striae (optical inhomogeneity)

Float & raw glass feature - reference; generally not “damage”

Diagnosis summary

Ream/cord/striae are optical inhomogeneities in float glass arising from localized variations in composition/temperature during forming. They present as streaks, swirls, or ribbons that deflect straight-line reflections and alter transmitted/reflected imagery, most apparent at oblique angles. These are factory optical features rather than local surface-relief defects.

Field identification cues

- Surface-catch class (MSRT):
- SC-0 (none). Perform one light, non-marring pass per VIS §5.5 to confirm absence of tactile relief; do not abrade or repeat passes. The MSRT is used only to support classification, not acceptance.
- Visual signature:
- Non-localized optical deflection (straight lines appear bent) or swirled streaks with no transition edge, no chip flanks, and no pits/craters typical of surface damage.

Classification, severity and scope

- Not field damage.
- If a similar appearance is confirmed between panes (fixed parallax in an IGU) or otherwise inaccessible, record CAT-5 and refer per project protocol.

Distinguishing criteria

- vs.
- vs. Abrasion fields (M.02): Abrasion shows directional patterning and can escalate to slight/clear catch; ream/cord remain SC-0 with no transition edge.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking usage; capture a straight-line reflection (mullion/string line) to show optical bending.
- MSRT result: Record SC-0 (none); one pass only; non-marring.
- Forms: Pane ID; product family and surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-02-04-ream-cord-striae-optical-inhomogeneity/

DSS-P.02.05 | Processing / Manufacturing Features

Draw / Float Swirl (optical patterning)

Float & raw glass feature - reference; generally not “damage”

Diagnosis summary

Pane-scale optical flow patterning-subtle swirls/eddies formed by melt/float-bath flow and composition/temperature variations during manufacture. Presents as low-contrast swirl bands or gentle flow lines that bend straight reflections and modulate sheen, typically strongest at oblique angles/raking light. These are factory optical features, not local surface-relief defects.

Field identification cues

- Surface-catch class (MSRT): SC-0 (none). Make one light, non-marring pass per VIS §5.5; no tactile interruption because this is optical, not relief. Do not abrade or repeat.
- Visual signature: Pane-scale non-directional swirl/flow appearance; no transition edge, no chip flanks, no pits/craters. See VIS definitions for non-directional variation and directional patterning.
- Viewing/lighting: Inspect at 12 / 36 / 72 in, normal + oblique sweep, under raking light; surfaces clean/dry (non-invasive reveal).
- Location/access: Record surface numbering (#1-#4; laminate-internal) on forms; acceptance pertains to the exposed surface being evaluated.

Classification, severity and scope

- Not field damage.
- Between-pane look-alike: If fixed parallax demonstrates a cavity condition, record CAT-5 and refer per project protocol.

Distinguishing criteria

- vs. Ream/Cord/Striae (P.02.04): Striae often appear as linear ribbon/streak patterns; draw/float swirl tends toward curvilinear “eddies.” Both are SC-0 and pane-scale.
- vs. Roller wave (P.01.01): Roller wave is periodic flatness deviation from heat-treat; swirls are non-periodic flow patterns from float.
- vs. Abrasion fields (M.02): Abrasion shows directional/web texture and may escalate to slight/clear catch; swirls remain SC-0 with no worked boundary.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; note raking usage; capture straight-line reflections (mullion/string) bending across the swirl field.
- MSRT result: Record SC-0; one pass only; non-marring.
- Forms: Pane ID; product family and surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-02-05-draw-float-swirl-optical-patterning/

DSS-P.03.01 | Processing / Manufacturing Features

Seamed / Arris Edge Texture (as-processed edge finish)

Fabrication & finishing - reference; generally not “damage”

Diagnosis summary

Seamed/arris edge texture is the factory edge finish produced by light grinding to remove sharpness after cutting. It may appear as a narrow frosted/ground band at the perimeter or as micro-striations normal to the edge. This is a manufacturing edge feature, not a worked-surface defect. Evaluate observations under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT):
- On the face area adjacent to the edge: SC-0 (none) for the factory arris itself (no local worked-surface relief on the face). Perform one light, non-marring pass per VIS §5.5; do not abrade or repeat.
- Visual signature:
- Non-directional frosted/matte edge band without a transition edge on the face and without chip flanks. (If chip flanks or pits/craters are present on the face, evaluate under M.03/M.04 families.)

Classification, severity and scope

- Processing feature - not surface damage.
- Escalate when:
- Edge micro-chips / clamshells propagate onto the face with clear catch or bright flanks → classify per M.03 (edge & corner) at CAT-3/4 by morphology.
- Between-pane/inaccessible cues (fixed parallax in IGU rabbet area) → CAT-5 by location/condition; refer per project protocol.

Distinguishing criteria

- vs. Abrasion fields on face (M.02): Abrasion shows directional/web texture on the face and can escalate to slight/clear catch; a factory arris remains edge-bound and SC-0 on the face.
- vs.
- vs. Hot-particle peppering (Th.01): Thermal pits present bright chip flanks and clear catch on the face; arris texture does not.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking usage; capture one frame showing edge band continuity across a long run to establish factory uniformity.
- MSRT result: Record SC-0 on the face adjacent to the arris; one pass only; non-marring.
- Forms: Pane ID; product family and surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-03-01-seamed-arris-edge-texture-as-processed-edge-finish/

DSS-P.03.02 | Processing / Manufacturing Features

Edge Grind / Polish Pattern (factory)

Fabrication & finishing - reference; generally not “damage”

Diagnosis summary

A factory edge-finish pattern produced by belt/diamond grinding and/or polishing after cutting. It can appear-when viewed from the face-as fine, parallel lineation or a narrow glossy/matte band immediately adjacent to the edge. This is a manufacturing edge feature, not a worked-surface defect on the face. Evaluate under VIS inspection lighting/geometry;

Field identification cues

- Surface-catch class (MSRT):
- On the face adjacent to the edge, record SC-0 (none)-one light, non-marring pass only; do not abrade or repeat. The MSRT supports classification only (not acceptance).
- Visual signature:
- Edge-bound, uniform grind/polish appearance, no transition edge on the face, no chip flanks, no pits/craters. If chip flanks or pits are present on the face, evaluate under M.03/M.04 families by morphology.

Classification, severity and scope

- Processing feature - not surface damage.
- Escalate when:
- Face-side micro-chips/clam-shells present with clear catch/bright flanks → classify under M.03 (edge & corner) at CAT-3/4 by morphology.
- Between-pane / inaccessible cues (fixed parallax in IGU) → CAT-5 (location/condition), refer per project protocol.

Distinguishing criteria

- vs. Abrasion fields on the face (M.02): Abrasion shows directional/web patterning on the face and may produce slight/clear catch; factory edge finish remains edge-bound and SC-0 on the face.
- vs. Fabrication-debris (FD) scratches (M.05): FD marks extend onto the face with linear tracks and may escalate in catch; uniform edge polish does not create face-side tracks.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking usage; capture at least one frame showing long-run edge uniformity to establish factory origin.
- MSRT result: Record SC-0 on the face; one pass only; non-marring.
- Forms: Pane ID; product family and surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-03-02-edge-grind-polish-pattern-factory/

DSS-P.03.03 | Processing / Manufacturing Features

Cutting Skid Lines (factory micro-lines)

Fabrication & finishing - reference; generally not “damage”

Diagnosis summary

Cutting skid lines are fine, short micro-lines generated during score-and-break cutting at the factory (wheel slip or micro-chatter just before/after the primary score). They are usually confined to the edge zone and appear only in raking/oblique views. As a manufacturing artifact, they are not, by themselves, a worked-surface defect on the face.

Field identification cues

- Surface-catch class (MSRT):
- On the face near the edge zone, record SC-0 (none) to SC-1 (slight) only. Perform one light, non-marring pass per VIS §5.5; do not abrade or repeat.
- Visual signature:
- Short, fine, parallel micro-lines confined to the edge zone; no transition edge, no pits/craters, no bright chip flanks typical of mechanical scoring.

Classification, severity and scope

- Processing feature - not surface damage.
- Escalate when:
- Any clear catch with bright chip flanks or extended linear runs across the face → classify under M.01 (linear scoring/tracks) at CAT-3/4 by morphology.
- Indicators show the condition is between panes / inaccessible (fixed parallax in IGU) → CAT-5 by location/condition; refer per project protocol.

Distinguishing criteria

- vs.
- vs. Abrasion fields (M.02): Abrasion shows directional/web texture with potential SC-1/SC-2 and broader field extent; cutting skid lines remain discrete and edge-bound.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking frames.
- MSRT result: Record SC-0 / SC-1; one pass only, non-marring; on coated faces prefer polymer stylus.
- Forms: Pane ID; product family and surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-03-03-cutting-skid-lines-factory-micro-lines/

DSS-P.03.04 | Processing / Manufacturing Features

Drill/Slot “Exit Lip” (acceptable edge artifact)

Fabrication & finishing - reference; generally not “damage” unless it propagates onto the face

Diagnosis summary

A localized burr/lip at the exit of a drilled hole or machined slot produced during fabrication when the tool breaks through the ply. Typically confined to the edge of the hole/slot or immediately adjacent edge land, not onto the visible face. Considered a factory edge artifact rather than a worked-surface defect when it does not create a face-side transition edge or chip-flank morphology.

Field identification cues

- Surface-catch class (MSRT):
- On the face adjacent to the feature: record SC-0 (none)-one light, non-marring pass per VIS §5.5; do not abrade or repeat. On coated faces, prefer a polymer stylus and default to visual cues if any coating risk exists.
- Visual signature:
- Edge-confined lip at a hole/slot exit with no transition edge on the face; no pits/craters; no bright chip flanks on the face.

Classification, severity and scope

- Processing feature - not surface damage.
- Escalate when:
- Face-side micro-chipping or chip flanks propagate from the exit → classify by morphology under M.03 Edge & Corner or M.06 Drilling/Notching-Related at CAT-3/4 (clear catch; rough flanks; pits/craters).
- Crack initiation (edge-origin or through-thickness) is observed → document under M.07 Cracking & Fracture; CAT-5 if condition is structural/inaccessible for in-place work.
- Between-pane indication (fixed parallax in IGU cavity) → CAT-5 by location/condition; refer per project protocol.

Distinguishing criteria

- Attempting to “blend off” a factory exit lip onto the face can create a worked region with a visible transition edge, which VIS disallows at acceptance.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros showing the exit perimeter and a context frame confirming the lip is edge-confined (no face.
- MSRT result: Record SC-0 on the face; one pass only, non-marring; on coated faces, prefer polymer stylus.
- Forms: Pane ID; product family + surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-03-04-drill-slot-exit-lip-acceptable-edge-artifact/

DSS-P.03.05 | Processing / Manufacturing Features

Patterned / Textured Glass Relief (design)

Specialty & decorative - reference; generally not “damage”

Diagnosis summary

Patterned/textured glass is manufactured with intentional surface relief (e.g., flutes, prismatic or pebbled textures) as an aesthetic/functional design. The relief is inherent to the product, not a worked-surface defect. Evaluate observations under the VIS inspection lighting/geometry;

Field identification cues

- Surface-catch class (MSRT):
- On the intended textured face, MSRT will sense design relief; do not abrade. One light, non-marring pass only; on coatings, prefer a polymer stylus or rely on visual morphology + location.
- Visual signature:
- Non-directional, uniform relief without a worked transition edge; no chip flanks/pits typical of mechanical scoring or hot-particle attack. Use normal incidence and oblique sweep (~60°-120°) at 12 / 36 / 72 in under raking light.

Classification, severity and scope

- Processing/design feature - not surface damage.
- Escalate when:
- A local worked region is visible on the textured face (e.g., a transition edge/ring, local directional patterning, chip flanks or pits/craters).
- The cue shows fixed parallax within an IGU (between-pane). → CAT-5 (out of in-place scope); refer per project protocol.

Distinguishing criteria

- vs. Abrasion fields (M.02): Abrasion presents directional/web texture and may produce slight/clear catch; design textures are uniform and lack chip flanks.
- vs. Chemical etch (Ch.03/Ch.01): Etch shows modeled micro-texture and can create localization/halos; design texture is consistent and non-localized.
- vs. Coating anomalies (Co.01/Co.03): Coating rub/patchiness is a worked-surface anomaly and is not permitted on coated faces at acceptance (VIS §6.2.e).

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking frames showing uniform texture and context frames proving product continuity (not a localized worked patch).
- MSRT result: Record SC class (note: design texture may feel as relief; record without probing).
- Forms: Pane ID; product family and surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-03-05-patterned-textured-glass-relief-design/

DSS-P.04.01 | Processing / Manufacturing Features

Ceramic Frit Pattern Boundaries (design)

Specialty / decorative system - reference; generally not “damage”

Diagnosis summary

Ceramic frit (silk-screened/enamel) is a fired, glass-ceramic coating applied in controlled patterns (e.g., dots, lines, gradients, bands) for solar control, opacity, or aesthetics. Pattern boundaries (dot-matrix edges, band terminations, registration seams) are intentional design features, not worked-surface defects. Observation follows VIS inspection geometry;

Field identification cues

- Surface-catch class (MSRT):
- On the intended frit face, record the MSRT result without probing; run one light, non-marring pass only. Treat frit as product geometry/finish; on coated systems or IGUs default to visual morphology + location if any risk exists.
- Visual signature:
- Pattern-true edge with no worked transition ring, no chip flanks/pits, and no directional swirl/web typical of mechanical/chemical damage.

Classification, severity and scope

- Design/processing feature - not surface damage.
- Escalate when:
- Frit over-spray / smear / offset appears outside the intended pattern (see Co.05.01 / Co.05.03) or a rub/scuff changes sheen (Co.02.02 / Co.01.01).
- Between-pane indication (fixed parallax at #2/#3 in an IGU) or otherwise inaccessible → CAT-5 by location/condition; refer per project protocol.

Distinguishing criteria

- vs. Paint overspray (R.02.01 / Co.05.03): Overspray leaves random, non-registered specks/film beyond design edges; may soften with reveal or show directional deposition.
- vs. Coating rub/patchiness (Co.01/Co.02/Co.03): Rubs create sheen shifts or streaks that may have a worked perimeter; VIS disallows anomalies on the worked surface at acceptance.
- vs. Abrasion fields (M.02): Abrasion shows swirls/web/cross-hatch and can escalate to SC-1/SC-2; frit boundaries remain pattern-true and non-tactile at adjacent clear glass.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of the boundary and context frames proving pattern continuity (not a localized worked patch).
- MSRT result: Record SC class at adjacent clear face (avoid probing into frit). One pass only; non-marring. On suspected coated surfaces, prefer polymer stylus or visual-only.
- Forms: Pane ID; surface numbering; worked surface Y/N; functional coating present on worked surface? (Y/N/Unknown); geometry checklist; photos attached.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-04-01-ceramic-frit-pattern-boundaries-design/

DSS-P.04.02 | Processing / Manufacturing Features

Laminated Interlayer Pattern / Print (design)

Specialty / decorative system - reference; generally not “damage”

Diagnosis summary

Laminated glass can incorporate printed, patterned, or decorative interlayers (e.g., ceramic-ink prints on film, colored/gradient PVB/ionoplast, fabric meshes). These visuals reside within the laminate between plies and are intentional design attributes, not worked-surface defects on the exposed face.

Field identification cues

- Surface-catch class (MSRT):
- On the exposed face, the print is encapsulated; record SC-0 (none) with one light, non-marring pass per VIS §5.5 (supports classification only; do not abrade). Prefer a polymer stylus or visual-only on suspected coated faces.
- Visual signature:
- Design-true edges and artwork seen through the ply; no worked transition ring on the exposed face; no chip flanks/pits typical of mechanical or hot-particle damage.

Classification, severity and scope

- Design/processing feature - not surface damage.
- Escalate when:
- A local worked region exists on the exposed face (visible transition edge/ring, directional patterning, chip flanks/pits) → classify under M-/Ch- families by morphology and assign CAT per VIS.
- The cue is between panes or within the laminate (i.e., laminate-internal cue) such that it’s inaccessible → CAT-5 by location/condition; document and refer per project protocol.

Distinguishing criteria

- vs. Interlayer defects (A.02 family): Bubbles/stringers/edge haze are defect morphologies within the laminate (not design prints) and may trigger CAT-5 by inaccessibility.
- vs.
- vs. Paint/film overspray (R.02/R.01): Overspray/adhesive films are on the exposed face and can change with reveal; printed interlayers do not change after cleaning.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros showing artwork through the ply with no face-side perimeter, plus context frames confirming pattern.
- MSRT result: Record SC class on the exposed face (one pass, non-marring). Use polymer stylus or visual-only near coatings.
- Forms: Pane ID; surface numbering; worked surface Y/N; functional coating on worked surface? (Y/N/Unknown); geometry checklist; photos attached.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-04-02-laminated-interlayer-pattern-print-design/

DSS-P.04.03 | Processing / Manufacturing Features

Spandrel Opacity Variation (system tolerance)

Specialty/Decorative Systems - reference; generally not “damage”

Diagnosis summary

Spandrel glass uses an opaque back-paint or ceramic-frit system to mask building elements. Minor opacity/tonal variation is a system/production tolerance (paint film build, substrate/cavity effects) and is not a worked-surface defect. Evaluate using the VIS inspection lighting/geometry;

Field identification cues

- Surface-catch class (MSRT): SC-0 (none). One light, non-marring pass per VIS §5.5; do not abrade or repeat. On suspected coated faces, prefer a polymer stylus or rely on visual cues. MSRT supports classification only.
- Visual signature: Pane-scale opacity/tonal non-uniformity without a local “worked” perimeter, transition edge, chip flanks, or pits/craters.
- Viewing/lighting: Inspect at 12 / 36 / 72 in, normal incidence and oblique sweep (~60°-120°) under raking light; surfaces clean & dry (non-invasive reveal).
- Location/access: Log pane ID & surface numbering (#1-#4; laminate-internal) on forms; acceptance pertains to the exposed surface being evaluated.

Classification, severity and scope

- Not field damage.
- Escalate / reclassify when localized anomalies are present:
- Pinholes/holidays or adhesion-loss islands in the back-paint → Co.04.02 / Co.04.03 (coating defects on spandrel).
- Surface rub/patchiness on an exterior coated face (non-spandrel functional coat) → Co.01/Co.03 and classify by CAT per VIS (appearance-only).
- Between-pane look-alike (fixed parallax in an IGU) → CAT-5 (out of in-place scope by location); refer per project protocol.

Distinguishing criteria

- vs. Coating anomalies (worked-surface): Coating rub/patchiness is localized, may show a worked boundary, and is disallowed at acceptance on coated faces (VIS §6.2.e).
- vs.
- vs. Decorative glazing texture: Patterned/textured glass has intentional surface relief (design).

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking frames that show pane-scale tone/mottle, and at least one context frame establishing lack of a local.
- MSRT result: Record SC-0 (one pass only; non-marring; polymer stylus on suspected coatings).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-04-03-spandrel-opacity-variation-system-tolerance/

DSS-P.04.04 | Processing / Manufacturing Features

Curved/Bent Glass Local Thickness / Thinning Signatures

Specialty/Decorative systems - reference; generally not “damage”

Diagnosis summary

Curved/bent glass local thickness/thinning signatures are pane-scale shape and thickness variations inherent to thermal bending/forming. They can present as subtle local thinning or thickening zones (e.g., at tight radii or near quench/bend tooling influence) that modulate reflections/transmission without forming a worked perimeter on the exposed face. These are manufacturing attributes observed under VIS geometry;

Field identification cues

- Surface-catch class (MSRT)
- SC-0 (none) at the exposed face. Make one light, non-marring pass per VIS §5.5 to confirm no local relief; MSRT supports classification only (do not abrade).
- Visual signature
- Pane-scale, non-perimeter optical shape/thickness effects contiguous with the bent geometry; no chip flanks, pits/craters, and no worked transition ring on the clear face.

Classification, severity and scope

- Processing/design feature - not field damage.
- If factory flatness/optical distortion must be quantified for product acceptance, refer to product specifications (e.g., ASTM C1036/C1048) and optical distortion background (ASTM C1651, informative).
- The Glass Restoration Standards...

Distinguishing criteria

- vs. Roller wave (P.01.01): Roller wave is periodic flatness deviation from heat-treat; bent-glass thickness signatures are geometry-driven and track the bend radius, both SC-0 at the face.
- vs. Abrasion fields (M.02): Abrasion shows directional patterning and can escalate to slight/clear catch; bent-glass thickness signatures remain SC-0 and lack a worked boundary.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros as needed; capture a straight-line reflection frame (mullion/string-line/horizon) across the bent.
- MSRT result: Record SC-0 (one light, non-marring pass; do not abrade).
- Forms: Pane ID; product family + surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-p-04-04-curved-bent-glass-local-thickness-thinning-signatures/

DSS-A.01.01 | Assembly / Internal Conditions

Internal Haze / Volatile Fogging (#2 / #3)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Internal haze/volatile fogging is a diffuse film or whitish veil deposited on IGU cavity faces (usually #2 / #3), arising from outgassing or volatile transport within the sealed unit. Because the cue resides between panes, it is not accessible to in-place restoration; classification is driven by location/condition rather than surface catch.

Field identification cues

- Location / access (primary):
- Confirm the cue is between panes using parallax: the feature's position is fixed relative to its reflection when the observer moves. Record #2 / #3 if applicable. If between panes, treat as CAT-5 by location.
- Surface-catch class (MSRT):
- Not determinative for between-pane conditions; classification is location/condition-driven. If attempted on the exposed face, record SC = n/a for the internal cue; do not abrade.

Classification, severity and scope

- CAT-5 - Out of scope for in-place restoration when confirmed between panes (IGU cavity) or otherwise inaccessible. Document and refer per project protocol (e.g., manufacturer/service).
- If the haze proves to be on the exposed face (responds to reveal and shows worked-surface morphology), reclassify under R (film/residue) or Ch (chemical) families and assign CAT per VIS (§4.2).

Distinguishing criteria

- vs. Exterior/interior films (R.04 / R.02): True residues on #1/#4 change with Non-Invasive Reveal; internal haze does not.
- vs. Low-E coating rub (Co.01/Co.03): Coating rubs are worked-surface anomalies on an exposed coated face and are disallowed at acceptance when present on the worked surface (VIS §6.2.e).
- vs. Condensation: Temporary moisture on #1/#4 violates VIS environment controls (no wet/condensing surfaces) and clears with dry/conditioning; internal haze persists.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking frames.
- Forms: Pane ID; surface numbering (#1-#4; laminate-internal if applicable); worked surface Y/N; functional coating present on worked surface?
- Acceptance split: CAT-5 conditions are not subject to in-place acceptance under VIS; document and refer.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-01-01-internal-haze-volatile-fogging-2-3/

DSS-A.01.02 | Assembly / Internal Conditions

Moisture / Condensation Between Panes (#2 / #3)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Between-pane condensation is liquid water or condensate films/droplets observed on IGU cavity faces (typically #2 / #3) due to moisture ingress, seal failure, or internal humidity/temperature cycling. Because the cue resides inside the sealed unit, it is not accessible to in-place restoration; classification is governed by location/condition rather than surface-catch.

Field identification cues

- Location / access (primary):
- Confirm the condition is between panes using parallax: the feature's apparent position is fixed relative to its reflection when the observer moves. Log as #2 / #3 per surface numbering.
- Surface-catch class (MSRT):
- Not determinative for between-pane conditions; MSRT on #1/#4 cannot assess a cavity-face cue. CAT-5 is location/condition-driven.

Classification, severity and scope

- CAT-5 - Out of scope for in-place restoration when between-pane (IGU cavity) or otherwise inaccessible. Document and refer per project protocol (e.g., replacement or manufacturer service).
- If the moisture proves to be on #1/#4 (responds to reveal / drying), it is an environmental condition and must be removed/controlled prior to classification; only residual cues on the exposed face (e.g.,.

Distinguishing criteria

- vs. Internal haze/volatile fogging (A.01.01): Haze appears as a dry veil/film and remains even when the cavity is not visibly wet.
- vs. Exterior/interior surface condensation (#1/#4): Disallowed by VIS environment controls; clears with dry/conditioning per §5.3.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking frames.
- Forms: Record pane ID; product family & surface numbering (#1-#4; laminate-internal if applicable); worked surface Y/N; functional coating present on worked surface?
- Acceptance split: CAT-5 conditions are not subject to in-place acceptance under VIS; document and refer.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-01-02-moisture-condensation-between-panes-2-3/

DSS-A.01.03 | Assembly / Internal Conditions

Desiccant Dust / Fines in IGU Cavity

Diagnosis summary

Particulate fines (typically white/gray) released from or tracked by the spacer/desiccant system within an insulating glass unit (IGU) cavity. Presents on cavity faces (#2 and/or #3) and is not accessible in-place. IGU surface numbering and “between-pane” determination follow the VIS conventions.

Field identification cues

- Location cue (parallax): Fixed parallax confirming #2/#3 cavity faces → record as a between-pane condition.
- MSRT (surface-catch): Not applicable to the cavity faces; do not attempt tactile checks on inboard/outboard faces to infer between-pane relief.
- Surface numbering on forms: Log #1-#4 per VIS and note “cavity (#2/#3)” in remarks.

Classification, severity and scope

- CAT-5 (Non-repairable / out of in-place scope by location). Between-pane/cavity contaminants are not addressable in place; document and refer per project protocol (manufacturer/warranty/replacement).

Distinguishing criteria

- vs. Exterior/interior dust or paint specks (R-family): Face-side residues change with Non-Invasive Reveal; true cavity fines do not. Use parallax to confirm between-pane location.
- vs. Spacer smear/bleed (A.01.04): Smear appears as continuous bands/films along the spacer sightline rather than discrete specks; both are CAT-5 by location.
- vs. Low-E coating rub/patchiness on worked surface (Co-family): Coating anomalies are on an exposed worked face and are disallowed at acceptance; cavity fines sit behind the face (CAT-5).

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking frames and at least one sequence demonstrating fixed parallax relative to the reflection.
- Forms: Pane ID; product family; surface numbering (#1-#4; laminate-internal); “cavity (#2/#3)” noted; lighting/time; geometry checklist.
- Narrative note: “Between-pane particulate; non-responsive to Non-Invasive Reveal; CAT-5 by location.” (VIS separates classification from acceptance; factory/warranty governs.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-01-03-desiccant-dust-fines-in-igu-cavity/

DSS-A.01.05 | Assembly / Internal Conditions

Low-E / Functional-Coating Appearance Change Inside Cavity (#2 / #3)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Non-uniform appearance change (e.g., patchiness, color shift/iridescence, fine “islands”/pinholes, micro-mottle) on a functional coating located on IGU cavity faces (#2 or #3). Because the affected face is between panes, it is not an exposed worked surface and is not addressable in-place; classification is governed by location/condition.

Field identification cues

- Location / access (primary):
- Use surface numbering to identify #2/#3. Demonstrate between-pane by fixed parallax (feature stays fixed relative to its reflection as the observer moves). CAT-5 by location when confirmed.
- Surface-catch class (MSRT):
- Not determinative for a cavity-face condition. MSRT applies to exposed faces only and is a single, non-marring pass used to support classification-not acceptance.

Classification, severity and scope

- CAT-5 - Out of scope for in-place restoration when the anomaly resides on #2/#3 (between panes). Document and refer per project protocol (manufacturer/warranty/replacement).

Distinguishing criteria

- vs.
- vs. Exterior/interior residue films (R-family): Face-side films respond to Non-Invasive Reveal; cavity anomalies do not.
- vs. Internal volatile fog/haze (A.01.01): Haze presents as a diffuse veil; coating corrosion shows patchy/color change with coating-like boundaries.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, with raking; include frames that show patch boundaries and at least one parallax sequence demonstrating a between-pane cue.
- Forms: Record pane ID; surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?
- Narrative split: “Cavity-face functional-coating anomaly on #2/#3; CAT-5 by location.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-01-05-low-e-functional-coating-appearance-change-inside-cavity-2-3/

DSS-A.01.06 | Assembly / Internal Conditions

Breather / Altitude-Tube Staining Pattern (#2 / #3)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Characteristic staining or streaking patterns deposited on IGU cavity faces (usually #2 / #3) associated with breather/altitude-tube ports used during fabrication/shipping/altitude equalization. By location (between panes), these cues are not on an exposed worked face and are not addressable in place; classification is therefore location/condition-driven.

Field identification cues

- Location / access (primary):
- Identify faces via surface numbering (#1-#4). Demonstrate between-pane location by fixed parallax (feature remains stationary relative to its reflection as the observer moves). If confirmed, classify CAT-5 by location.
- Surface-catch class (MSRT):
- Not determinative for a cavity-face cue. MSRT is for exposed faces only and is a single, non-marring pass to support classification-not acceptance. On the exposed face, record SC-0 (no relief) if checked.

Classification, severity and scope

- CAT-5 - Out of scope for in-place restoration when the staining resides on #2/#3 (between panes). Document and refer per project protocol (manufacturer/warranty/replacement).

Distinguishing criteria

- vs. Spacer smear/bleed (A.01.04): Spacer smear typically forms continuous bands parallel to the spacer; breather-tube staining often radiates from a point/port or short perimeter segment.
- vs. Internal haze/volatile fogging (A.01.01): Fogging is a diffuse veil across a broader field; tube staining is localized with identifiable origin. Use parallax and perimeter context.
- vs. Face-side residue (R-family): Face films respond to reveal; cavity staining does not. Confirm with reveal and fixed parallax.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; include a parallax sequence and perimeter frames that show the tube/port adjacency.
- Forms: Record pane ID, product family & surface numbering (#1-#4; laminate-internal), worked surface Y/N, functional coating present on worked surface?
- Narrative split: “Between-pane perimeter staining consistent with breather/altitude-tube origin on #2/#3; CAT-5 by location; refer per protocol.”

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-01-06-breather-altitude-tube-staining-pattern-2-3/

DSS-A.02.01 | Assembly / Internal Conditions

Edge haze / whitening (laminated interlayer; PVB / ionoplast)

Diagnosis summary

A milky, desaturated band or clouding that develops within the laminated interlayer zone near the perimeter, typically within a few millimeters to several centimeters of the edge. It is an internal condition (between glass plies) of laminated glass and not a worked-surface defect. Because it is laminate-internal, it is generally out of in-place restoration scope; document and refer.

Field identification cues

- Surface-catch class (MSRT): None on either exposed face. One light, non-marring pass per VIS §5.5; do not abrade. (MSRT definition and use.
- Visual signature: Edge-parallel, diffuse whitening inside the laminate; no chip-flank sparkle, no pits/craters at the exposed face; persists after non-invasive reveal. (Reveal.
- Location / access: Laminate-internal (between plies). Record surface numbering for the lite(s) and note that the observation is laminate-internal rather than on #1/#4 faces. (Surface numbering & non-exposed surfaces.
- Diagnostic differentiators:

Classification, severity and scope

- CAT-5 (Out of in-place scope): Record as A.02.01 - Laminate-internal whitening (CAT-5) and refer to fabricator/manufacturer or replacement per project protocol. (CAT-5 scope & rationale.
- If any face-side damage is also present (e.g., mechanical scoring at the perimeter), classify that separately under the appropriate M-family item and assign CAT per VIS.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-02-01-edge-haze-whitening-laminated-interlayer-pvb-ionoplast/

DSS-A.02.02 | Assembly / Internal Conditions

Bubbles / Stringers (entrapped gas/voids in laminated interlayer)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Discrete bubbles (rounded voids) or stringers (elongate/filamentary voids) within the laminated interlayer (between plies). These are laminate-internal features-not on an exposed worked face-and are therefore not addressable in place; classification is location/condition-driven. Product/spec context for laminated glass: ASTM C1172; ISO 12543.

Field identification cues

- Location / access (primary):
- Confirm laminate-internal location. On project forms, record product family (laminated) and surface numbering (#1-#4; laminate-internal).
- Surface-catch class (MSRT):
- SC-0 (none) on the exposed face(s). MSRT is a single, non-marring pass used only to support classification-not acceptance. Do not abrade.

Classification, severity and scope

- CAT-5 - Out of in-place scope when features are laminate-internal (not on an exposed worked surface). Document and refer per project protocol (fabricator/manufacturer/warranty).

Distinguishing criteria

- vs.
- vs. Adhesive/film domes (R-family) on #1/#4: Face-side residues respond to Non-Invasive Reveal; laminate-internal bubbles do not.
- vs. Local delamination (A.02.06): Delamination often shows defined boundary (Newton fringes/iridescence) or creep; bubbles/stringers are discrete voids without broad separation.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; add one back-lit close-up (when safe) to show void boundaries.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?
- Measurements (if requested): Approximate void size (mm), count per area, and distance from edge; note temperature/RH at time of inspection (for reproducibility).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-02-02-bubbles-stringers-entrapped-gas-voids-in-laminated-interlayer/

DSS-A.02.03 | Assembly / Internal Conditions

Contamination Inclusions (foreign matter within laminated interlayer)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Discrete foreign particles/fibers/particulates encapsulated within the laminated interlayer between glass plies (e.g., dust, fabric lint, granules, hairline fibers). These are laminate-internal features-not on an exposed worked face-and are therefore not addressable in place; classification is location/condition-driven. Product/spec context for laminated glass: ASTM C1172 and ISO 12543 (normative in VIS).

Field identification cues

- Location / access (primary):
- Confirm laminate-internal location. On forms, record product family (laminated) and surface numbering (#1-#4; laminate-internal). Do not re-number laminate-internal faces as IGU faces.
- Surface-catch class (MSRT):
- SC-0 (none) on exposed face(s). MSRT is single, non-marring and used only to support classification-not acceptance. Do not abrade.

Classification, severity and scope

- CAT-5 - Out of in-place scope when inclusions are laminate-internal (not on an exposed worked surface). Document and refer per project protocol (fabricator/manufacturer/warranty).

Distinguishing criteria

- vs. Face-side residues/overspray (R-family): Face films respond to Non-Invasive Reveal; true inclusions do not.
- vs. Stones/knots in float (P.02.03): Factory solid inclusions in the glass mass (processing feature); encapsulated and SC-0 on the face.
- vs. Bubbles/stringers (A.02.02): Gas voids without foreign matter; contamination inclusions show solid particulate/fiber boundaries.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; include a back-lit close-up (when safe) to show inclusion boundary; ensure reveal completed is noted.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?
- Optional measurements: Approximate particle size (mm), count per area, distance from edge; note temperature/RH at time of inspection. (Use VIS form notes.)

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-02-03-contamination-inclusions-foreign-matter-within-laminated-interlayer/

DSS-A.02.04 | Assembly / Internal Conditions

Interlayer Creep / Exudation at Edge

edge ooze; interlayer flow/exposure; location/condition = laminate-internal; typically CAT-5 by location/inaccessibility

Diagnosis summary

Localized flow, squeeze-out, or exposure of the laminated interlayer at or near the laminate edge. Presents as soft or glossy interlayer material visible at the ply edges; may wet adjacent components or leave a faint transfer on adjacent framing or gaskets. Because the condition originates within the laminate stack (between plies), it is not a face-side glass surface defect.

Field identification cues

- Location/access: Confirm the observation is at the laminate edge and originates between plies (laminate-internal).
- Non-invasive reveal: Clean and dry the exposed face per VIS before evaluating; edge ooze will not be removed by a face-side reveal, though incidental transfer on the face may wipe away.
- MSRT (Manual Surface-Relief Test): On the face, one light, non-marring pass only. Expect SC-0 on the face (no relief) unless there is a separate residue on the face; classification remains location-driven.
- Viewing/lighting: Evaluate at 12 / 36 / 72 in using normal incidence + oblique sweep (~60°-120°) under raking light; document the edge zone and overall context.

Classification, severity and scope

- Default: CAT-5 by location/condition - the condition is between plies (laminate-internal) and not addressable on the exposed face in place. Document and refer per project protocol.
- Escalate/branch when:
- Face residue/transfer is present from the ooze (e.g., on the frame or a smear on the glass face): classify the face residue under the appropriate R.01 / R.05 DSS entry (residue/transfer) by CAT using.
- Edge damage or cracking is also observed: classify those features under M.03 / M.07 as applicable, separate from the laminate-internal ooze.

Distinguishing criteria

- vs.
- vs. A.02.01 Edge haze/whitening: Whitening is a diffuse optical change within the edge region of the interlayer; creep/exudation presents as material flow/exposure at the perimeter.
- vs. A.02.06 Local delamination: Delamination shows ply/interlayer separation (air/void interface) rather than material ooze; look for edge “silvering”/void lines and parallax behaviors.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique sweep with raking light; include at least one macro of the edge showing interlayer exposure/flow and one context frame.
- MSRT result (face): Record SC class on the face (expect SC-0); one pass only, non-marring; if a coating is present on the worked face, prefer polymer stylus or rely on.
- Forms: Pane ID; product family + surface numbering (#1-#4; “laminate-internal” as needed); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-02-04-interlayer-creep-exudation-at-edge/

DSS-A.02.05 | Assembly / Internal Conditions

Interlayer Discoloration / Yellowing (UV/thermal aging; laminated interlayer)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

A gradual color shift (amber/yellow/brown) occurring within the laminated interlayer (PVB/ionoplast, etc.) due to UV exposure, thermal load, or aging, observed between the plies. This is a laminate-internal appearance condition (not on an exposed worked face) and is generally not addressable in place; classification is location/condition-driven.

Field identification cues

- Location / access (primary):
- Confirm the phenomenon is laminate-internal (between plies). On forms, record product family (laminated) and surface numbering (#1-#4; tag as laminate-internal). This is not an exposed worked face.
- Surface-catch class (MSRT):
- On exposed faces, record SC-0 (none). MSRT is single, non-marring and supports classification only; do not abrade. Prefer a polymer stylus on coated faces or rely on visual/location cues.

Classification, severity and scope

- CAT-5 - Out of in-place scope when discoloration resides within the laminate (not on an exposed worked surface). Document and refer per project protocol (fabricator/manufacturer/warranty).

Distinguishing criteria

- vs. External films/residues (R-family): Face films respond to Non-Invasive Reveal; interlayer yellowing does not.
- vs. Edge haze/whitening (A.02.01): Whitening is a milky diffuse edge effect; discoloration is a color cast (amber/brown) without a sharp boundary.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; include at least one back-lit image (when safe) to show internal color shift.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?
- Context notes: Orientation (cardinal), presence of frit/spandrel/film behind glass, proximity to heat sources; ambient temperature/RH at time of inspection.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-02-05-interlayer-discoloration-yellowing-uv-thermal-aging-laminated-interlayer/

DSS-A.02.06 | Assembly / Internal Conditions

Local Delamination (ply/interlayer separation; laminated glass)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Local delamination is a separation between a glass ply and the interlayer (or between interlayers) creating a void/air interface within the laminate stack. Presents as silvering, Newton-fringe iridescence, or a defined lens-like boundary inside the laminate. Because the cue is laminate-internal (between plies), it is not on an exposed worked face and is not addressable in place;

Field identification cues

- Location / access (primary):
- Confirm laminate-internal location. On forms, record product family (laminated) and surface numbering (#1-#4; tag as laminate-internal). Do not re-number laminate-internal interfaces as IGU faces.
- Surface-catch class (MSRT):
- On exposed faces, record SC-0 (none). MSRT is single, non-marring and supports classification only-do not abrade to “probe” an internal cue. Prefer polymer stylus on coated faces or rely on visual/location cues.

Classification, severity and scope

- CAT-5 - Out of in-place scope when separation is within the laminate (not on an exposed worked surface). Document and refer per project protocol (fabricator/manufacturer/warranty).
- If face-side damage also exists (e.g., perimeter scoring), classify that separately under the appropriate M-family item and assign CAT per VIS.

Distinguishing criteria

- vs. Bubbles/stringers (A.02.02): Bubbles are discrete voids (round/linear) without pronounced fringe patterns; delamination shows defined separation boundary with silvering/iridescence.
- vs. Edge haze/whitening (A.02.01): Whitening is diffuse/milky; delamination has a sharp lens-like boundary and fringe effects.
- vs. Interlayer creep/exudation (A.02.04): Creep is material flow/exposure at the edge; delamination is ply/interlayer separation (air interface) within the stack.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; include at least one back-lit macro (when safe) to capture fringes/silvering and a context frame showing edge.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?
- Progression note: If observed across site visits, record growth/creep of boundary (mm and date) and any environmental conditions (temperature/RH, sunload).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-02-06-local-delamination-ply-interlayer-separation-laminated-glass/

DSS-A.03.01 | Assembly / Internal Conditions

Mirror Edge Blackening (back-coating corrosion)

Assembly / back-coated products - typically out of in-place scope

Diagnosis summary

Localized darkening/blackening that initiates at the perimeter of a silvered mirror and advances inward beneath the protective paint (back-coating). The phenomenon results from moisture/chemical ingress at edges or penetrations, leading to corrosion of the reflective metal layer. Appearance is behind the glass substrate (back side), not on the exposed viewing face.

Field identification cues

- Surface-catch class (MSRT):
- On the exposed viewing face, record SC-0 (no relief). Perform one light, non-marring pass only; MSRT supports classification and must not abrade the surface.
- Reveal / lighting / geometry:
- Evaluate clean & dry after a Non-Invasive Reveal; use raking light and assess at 12 / 36 / 72 in at normal incidence and through an oblique sweep ~60°-120°.

Classification, severity and scope

- CAT-5 (Out of Scope for In-Place Restoration): If the cue is confirmed as back-coating corrosion (behind the glass), classify CAT-5 by location/condition and refer to replacement or mirror-fabrication.
- If any additional face-side damage (scratches, pits, coating anomalies) is present on the exposed surface, classify that face-side condition separately under the appropriate M/Co/Ch family by CAT; do not.

Distinguishing criteria

- vs. Front-face residues/films (R-series): Residues change with reveal and may show front-face MSRT cues; mirror blackening does not respond to reveal and remains under-glass.
- vs.
- vs. IGU between-pane defects: Fixed parallax within an IGU cavity indicates between-pane location; treat as CAT-5 similarly (out of in-place scope).

Documentation and inspection

- Photo set (VIS):
- 12 / 36 / 72 in; normal + oblique; include raking frames.
- One edge context frame showing the advancing black band from the perimeter or cutout; one macro confirming the cue sits behind the glass (unchanged by reveal; SC-0 on face).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-03-01-mirror-edge-blackening-back-coating-corrosion/

DSS-A.03.02 | Assembly / Internal Conditions

Spot Corrosion Behind Mirror (localized back-coating failure)

Assembly / back-coated products - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Discrete under-glass spots (darkening, brown/black dots, or small blooms) caused by localized corrosion of the reflective layer behind the glass where the protective back-paint/edge seal has been compromised (pinholes, scratches, clip pressure, moisture/chemical ingress). The phenomenon is behind the viewing surface (back-coating system), not on the exposed face. VIS acceptance pertains to the exposed face;

Field identification cues

- Surface-catch class (MSRT):
- On the exposed viewing face, record SC-0 (no relief). One light, non-marring pass only to support classification; do not abrade. Prefer a polymer stylus if a face functional coat is suspected.
- Reveal / lighting / geometry:
- Evaluate clean & dry after Non-Invasive Reveal; use raking light at 12 / 36 / 72 in with normal incidence + oblique sweep (~60°-120°) per VIS. Back-side spots remain unchanged by reveal.

Classification, severity and scope

- CAT-5 (Out of scope for in-place restoration): When confirmed as back-coating spot corrosion, classify CAT-5 by location/condition and refer to fabricator/replace per project protocol.
- If separate face-side damage exists (scratches, films, coating rubs), classify that condition independently under M/Co/R families by CAT; do not let the back-side condition set face acceptance.

Distinguishing criteria

- vs. Front-face specks/overspray (R.02/R.06): Face residues respond to Non-Invasive Reveal and may show MSRT cues; back-side spots do not.
- vs. Mirror edge blackening (A.03.01): Edge blackening is a perimeter creep band; A.03.02 presents as isolated spots/clusters, often at back-paint scratches or clip points.
- vs. IGU between-pane artifacts: IGU cavity features show fixed parallax between panes (#2/#3); mirror corrosion is behind the substrate.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; include a macro showing spot edges/under-glass character and a context frame showing proximity to.
- MSRT result (face): SC-0; one pass; polymer stylus preferred if a face coat is present/suspected.
- Forms: Pane ID; location; reveal status; lighting/time; geometry checklist; note “back-coating spot corrosion (behind glass)”; attach photos.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-03-02-spot-corrosion-behind-mirror-localized-back-coating-failure/

DSS-A.03.03 | Assembly / Internal Conditions

Adhesive / Chemical Attack from Behind (mirror back-coating)

Assembly / back-coated products - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Localized under-glass staining, bloom, or matting visible through the mirror that originates from adhesives, mounting compounds, cleaners, or chemicals acting on the back-coating/reflective layer (behind the glass). The cue is not on the exposed viewing face and therefore is not addressable in place; classification is location/condition-driven.

Field identification cues

- Surface-catch class (MSRT):
- On the exposed viewing face, record SC-0 (none). Perform one light, non-marring pass only to support classification; do not abrade.
- Reveal / lighting / geometry:
- Evaluate clean & dry after a Non-Invasive Reveal; inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) under raking light per VIS. Back-side attack remains unchanged by reveal.

Classification, severity and scope

- CAT-5 - Out of in-place scope when the appearance change arises in the back-coating system (behind the glass). Document and refer per project protocol (fabricator/replace).
- If any face-side condition is also present (scratches, films, coating rubs), classify that separately under M/Co/R families by CAT; do not let the back-side condition set face acceptance.

Distinguishing criteria

- vs. Front-face residues/films (R-series): Face films respond to Non-Invasive Reveal; back-side attack does not.
- vs.
- vs. IGU between-pane artifacts (A.01 family): IGU conditions show fixed parallax between #2/#3; mirror back-coating attack is behind a back-paint/reflective system, not a cavity condition.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, raking; include one macro confirming under-glass character (unchanged by reveal) and one context frame showing proximity.
- MSRT result (face): SC-0; one pass; non-marring; polymer stylus preferred when any face functional coat is present/suspected.
- Forms: Pane ID; product & context (mirror/back-coated); reveal status; lighting/time; geometry checklist; surface numbering where applicable.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-03-03-adhesive-chemical-attack-from-behind-mirror-back-coating/

DSS-A.04.01 | Assembly / Internal Conditions

Black Spots / Voids in Active Layer (PDLC / EC; switchable glazing)

Assembly / internal condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Discrete dark “black” spots, pin-voids, or small opaque islands occurring within the active switchable layer (e.g., PDLC or electrochromic stack) of a smart-glazing lite. Because the cue resides within the laminate or device stack (not on an exposed worked face), it is not addressable in place; classification is governed by location/condition under VIS rules.

Field identification cues

- Location / access (primary)
- Confirm the cue sits within the device/laminate and is not on a worked face. Demonstrate fixed parallax (feature remains fixed relative to its reflection as the observer moves).
- Surface-catch class (MSRT)
- On exposed face(s), record SC-0 (none). The Manual Surface-Relief Test is a single, non-marring pass used only to support classification-not acceptance; it cannot “probe” an internal cue.

Classification, severity and scope

- CAT-5 - Out of in-place scope when the condition is laminate/device-internal (not on an exposed worked surface). Document and refer per project protocol (fabricator/manufacturer/warranty).
- If any additional face-side damage exists (e.g., scratches, coating rub/patchiness), classify that separately under the appropriate family (M/Co/Ch) and assign CAT per VIS; do not let an internal cue.

Distinguishing criteria

- vs. Coating anomalies on the worked surface (Co-family): Coating rub/sheens occur on the exposed face and are disallowed at acceptance on coated surfaces (VIS §6.2.e).
- vs.
- vs. Face-side residues/films (R-family): Residues change with reveal and can show face-side MSRT cues; internal active-layer voids do not.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking frames and a short sequence (or paired frames) demonstrating fixed parallax.
- Forms: Pane ID; product family (smart glazing-PDLC/EC); surface numbering (#1-#4; laminate-internal if applicable); “worked surface Y/N”; functional coating present on.
- Acceptance split: Internal device/laminate conditions are not subject to in-place acceptance under VIS; document and refer.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-04-01-black-spots-voids-in-active-layer-pdlc-ec-switchable-glazing/

DSS-A.04.02 | Assembly / Internal Conditions

Busbar / Lead Defects Visible Through Lite (PDLC / EC; switchable glazing)

Assembly / internal device condition - typically CAT-5 by location; out of in-place scope

Diagnosis summary

Visible anomalies associated with busbars, printed/laminated leads, or current-distribution traces within a switchable glazing device (e.g., PDLC or electrochromic). Typical cues include misalignment/print-through, discontinuities, smears, voids, corrosion/discoloration along the busbar edge, or local opacity near conductors.

Field identification cues

- Location / access (primary)
- Confirm the cue sits within the device/laminate (not on #1/#4). Demonstrate fixed parallax to distinguish internal/device features from face-side conditions.
- Surface-catch class (MSRT)
- On exposed face(s), record SC-0 (none). The Manual Surface-Relief Test is a single, non-marring pass used only to support classification-not acceptance.

Classification, severity and scope

- CAT-5 - Out of in-place scope when the anomaly is internal to the switchable device/laminate (not on an exposed worked surface). Document and refer per project protocol (fabricator/manufacturer/warranty).
- If separate face-side damage exists (scratches, coating rub/patchiness), classify that independently under the appropriate family (M/Co/Ch) by CAT; do not let an internal cue control face-side acceptance.

Distinguishing criteria

- vs.
- vs. Between-pane particulate (A.01.03) or spacer smear (A.01.04): Cavity artifacts sit on #2/#3 faces; device traces are laminate/device-internal.
- vs. Face-side residues/films (R-family): Residues respond to Non-Invasive Reveal and can show face-side MSRT cues; busbar/lead issues do not.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking. Add one short sequence (or paired frames) demonstrating fixed parallax relative to reflections.
- Forms (VIS Appendix X3 fields): Pane ID; product family (smart glazing-PDLC/EC); surface numbering (#1-#4; laminate-internal if applicable); worked surface Y/N; functional.
- Acceptance split: Internal device/laminate conditions are not subject to in-place acceptance under VIS; document and refer per project protocol.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-a-04-02-busbar-lead-defects-visible-through-lite-pdlc-ec-switchable-glazing/

DSS-Co.01.01 | Coating Anomalies

Abrasion Sheen Shift / Rub Marks (sputtered low-E & multilayer films)

Coating anomaly on the worked surface - face-side condition; acceptance constrained by VIS §6.2 “Coatings”

Diagnosis summary

A localized change in sheen, luster, or color cast on a sputtered low-E or other multilayer functional coating, typically caused by contact, friction, or over-working at the exposed coated face (#1 or #4, as applicable). Presents as a rubbed patch, streak, or directional band without discrete chip flanks.

Field identification cues

- Surface-catch class (MSRT):
- Expect SC-0 (none) when the anomaly is purely optical in the coating stack. Perform one light, non-marring pass only; prefer a polymer stylus on suspected coated faces or rely on visual cues to avoid coating disturbance.
- Reveal / lighting / geometry:
- Perform Non-Invasive Reveal (clean & dry; no blades/chemicals) before evaluation. Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) under raking light, per VIS.

Classification, severity and scope

- Typical CAT band (appearance-based):
- CAT-1 if non-tactile sheen shift with SC-0 and no edge morphology.
- CAT-2 if subtle micro-texture yields SC-1 (slight).
- CAT-3 if pronounced, patchy modeled micro-texture visible at standard distance, still without chip flanks. (Use VIS visibility convention and MSRT outcome; assign CAT by observable cues, not by cause.)
- Acceptance split (critical): Even if classified CAT-1...CAT-3, coating anomalies on the worked surface are not permitted at acceptance under VIS §6.2 (“Coatings”); acceptance remains appearance-based at.

Distinguishing criteria

- vs. Mechanical scratches (M.01): Scratches show chip flanks/micro-chipping and SC-2 along a line; coating rubs lack chip flanks and are area-based sheen shifts (often SC-0).
- vs. Face films/residues (R-family): Residues change with Non-Invasive Reveal; a true rub persists after reveal.
- vs. Between-pane haze/volatiles (A.01.01): IGU internal cues show fixed parallax and are CAT-5 by location; coating rubs are on the worked face.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add a macro frame showing boundaryless sheen shift (no transition edge/chip flanks).
- MSRT result: Record SC class (expect SC-0); one pass, non-marring; on coated faces prefer polymer stylus or visual-only.
- Forms: Pane ID; surface numbering; worked surface Y/N; functional coating present on worked surface? (Y/N/Unknown); geometry checklist; photos attached.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-01-01-abrasion-sheen-shift-rub-marks-sputtered-low-e-multilayer-films/

DSS-Co.01.02 | Coating Anomalies

Color Non-Uniformity / Patchiness (sputtered low-E & multilayer films)

Coating anomaly on the worked surface - face-side condition; acceptance constrained by VIS §6 “Coatings”

Diagnosis summary

A localized change in color cast, tone, or optical density within a sputtered low-E or other multilayer functional coating on an exposed face (#1 or #4, as applicable). Presents as patchy zones, clouds, or bands without chip-flank fracture morphology. Under VIS, such coating anomalies are “coating anomalies (visual)” and are treated as appearance cues on the worked surface-not between-pane/system features.

Field identification cues

- Surface-catch class (MSRT):
- Expect SC-0 (none) if the cue is a pure coating-appearance change. Perform one light, non-marring pass only; prefer a polymer stylus on suspected coated faces-or rely on visual/location cues to avoid disturbing the coating.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal (clean & dry; no blades/chemicals) before evaluation. Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) with raking light, per VIS.

Classification, severity and scope

- Typical CAT band (appearance-based):
- CAT-1 - non-tactile color patchiness; SC-0; no edge morphology at acceptance geometry.
- CAT-2 - subtle micro-texture within the patch yielding SC-1 (slight).
- CAT-3 - pronounced, patchy modeled micro-texture detectable at standard distance, still without chip flanks. (Assign CAT by observable cues using VIS visibility convention + MSRT outcome.)
- Acceptance split (critical): Even if classified CAT-1...CAT-3, coating anomalies on the worked surface are not permitted at acceptance under VIS coatings guidance (see project-spec phrasing referencing.

Distinguishing criteria

- vs. Mechanical scratches (M.01): Scratches show chip flanks/micro-chipping and SC-2 along a line; coating color patchiness lacks flanks and is area-based.
- vs. Face films/residues (R-family): Residues change with Non-Invasive Reveal; a true coating patch persists after reveal.
- vs. IGU/internal haze (A.01.01) or cavity fines (A.01.03): Internal cues exhibit fixed parallax and are CAT-5 by location; coating anomalies are on the worked face.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add a macro frame showing boundaryless patchiness (no chip flanks/transition edge).
- MSRT result: Record SC class (expect SC-0); one pass, non-marring; on coated faces prefer polymer stylus or visual-only.
- Forms: Pane ID; surface numbering; worked surface Y/N; functional coating present on worked surface? (Y/N/Unknown); geometry checklist; photos attached.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-01-02-color-non-uniformity-patchiness-sputtered-low-e-multilayer-films/

DSS-Co.01.03 | Coating Anomalies

Pinholes / Islands (localized coating loss; sputtered low-E & multilayer films)

Coating anomaly on the worked surface or within cavity; acceptance constrained by VIS §6 “Coatings”

Diagnosis summary

Discrete clear points (“pinholes”) or small bare-glass islands within a sputtered low-E / multilayer functional coating. On exposed coated faces (#1 or #4, as applicable) these present as local loss of optical density (often brighter/clearer) without chip-flank fracture morphology. On cavity faces (#2/#3), they are between-pane and thus not addressable in-place; classification is then governed by location/condition.

Field identification cues

- Surface-catch class (MSRT):
- Expect SC-0 (none) for pure coating loss/absence; coating stacks are sub-µm and do not produce tactile relief at MSRT scale.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal before evaluation. Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) with raking light, per VIS.

Classification, severity and scope

- If on exposed coated face (#1/#4)
- CAT-1 - non-tactile, isolated pinholes with SC-0, not perceptible at standard/wide-field when clean.
- CAT-2 - faint modeled micro-texture around a pinhole yielding SC-1.
- CAT-3 - noticeable modeled micro-texture/halo visible at standard view, still without chip flanks. (Assign CAT by visibility convention + MSRT outcome; use appearance cues only.)
- If on cavity face (#2/#3) or otherwise inaccessible: CAT-5 - out of in-place scope by location; document and refer per project protocol (fabricator/manufacturer/warranty).

Distinguishing criteria

- vs. Face films/overspray (R-family): Films change with Non-Invasive Reveal; true pinholes persist.
- vs. Mechanical scratches (M.01): Scratches show chip flanks/micro-chipping and SC-2 along a line; pinholes are discrete points, SC-0.
- vs. IGU internal haze/volatiles (A.01.01) or cavity fines (A.01.03): Internal cues show fixed parallax and are CAT-5 by location.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames showing discrete point(s) without chip flanks or a worked ring.
- Forms: Pane ID; surface numbering; worked surface Y/N; functional coating present on worked surface? (Y/N/Unknown); geometry checklist; photos attached.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-01-03-pinholes-islands-localized-coating-loss-sputtered-low-e-multilayer-films/

DSS-Co.01.04 | Coating Anomalies

Chemical Attack Spots (cleaner/acid/alkali on sputtered stacks)

Coating anomaly on the worked surface or on a cavity face; acceptance constrained by VIS §6 “Coatings”

Diagnosis summary

Localized appearance changes (spots, rings, blooms) on a sputtered low-E / multilayer functional coating caused by chemical interaction (e.g., acidic brick wash, alkaline cleaners, aggressive solvents). On exposed coated faces (#1 or #4, as applicable), these present as sheen/colour/density shifts or matte “burns” without chip-flank fracture morphology.

Field identification cues

- Surface-catch class (MSRT):
- Expect SC-0 (none) for purely optical coating changes; SC-1 (slight) is possible if subtle micro-texture is present within the spot.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal (clean & dry; no blades/chemicals) before evaluation. Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) with raking light, per VIS.

Classification, severity and scope

- If on exposed coated face (#1/#4):
- CAT-1 - non-tactile spot/halo with SC-0; no edge morphology at acceptance geometry.
- CAT-2 - faint micro-texture within the spot yielding SC-1 (slight).
- CAT-3 - pronounced modeled micro-texture/patch detectable at standard distance, still without chip flanks. (Assign CAT by visibility convention + MSRT outcome; cause is informative only.)
- If on cavity face (#2/#3) or otherwise inaccessible: CAT-5 - out of in-place scope by location; document and refer per project protocol (fabricator/manufacturer/warranty).

Distinguishing criteria

- vs. Face films/residues (R-family): Residues change with Non-Invasive Reveal; a true coating attack persists after reveal.
- vs. Mechanical scratches (M.01): Scratches show chip flanks/micro-chipping and SC-2 along a line; chemical spots are area-based, boundaryless or haloed, and generally SC-0/SC-1.
- vs. IGU internal haze/volatiles (A.01.01): Internal cues show fixed parallax and map to CAT-5 by location.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames showing spot/halo without chip flanks or a worked transition edge.
- MSRT result: Record SC class (expect SC-0; SC-1 if micro-texture). One pass, non-marring; on coated faces prefer polymer stylus or visual-only.
- Forms: Pane ID; surface numbering; worked surface Y/N; functional coating present on worked surface? (Y/N/Unknown); geometry checklist; photos attached.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-01-04-chemical-attack-spots-cleaner-acid-alkali-on-sputtered-stacks/

DSS-Co.02.01 | Coating Anomalies

Roller Pickup / Line Ghosting (Pyrolytic Line)

Pyrolytic [hard-coat] low-E anomaly - transport/handling imprint during high-temperature deposition or subsequent hot processing; quasi-parallel sheen-shift bands at roller pitch; generally planar, film-level optical variation; typically SC-0, occasionally SC-1 at lightly textured pickup

Diagnosis summary

Roller pickup/line ghosting (pyrolytic line) is an appearance change confined to pyrolytic (hard-coat) low-E or comparable high-temperature functional coatings. It presents as quasi-parallel, longitudinal bands (machine/transport direction) at spacings consistent with support/transport rollers, with subtle sheen or color shift (ghosting). The phenomenon is planar within the coating and usually non-tactile.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 (planar optical variation within coating; no surface relief).
- SC-1 rare, where lightly textured pickup or fine particulate imprint provides very shallow relief.
- Perform one light, non-marring pass on a small revealed test patch. Use a polymer stylus only on suspected coated faces. MSRT supports classification only; do not abrade the coating.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Faint banding legible mainly at oblique/raking; SC-0; minimal impact at standard view. Indicative relief: 0-10 µm (film-level optical only).
- CAT-2 (Light): Discernible bands at standard distance in certain lighting; SC-0 (or rare SC-1 if lightly textured pickup). Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable band set at standard distance across significant area; SC-0/SC-1; clearly affects uniform appearance. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: If chip-flank sparkle or tactile grooves appear → M.01 Linear scoring; if uniform granular frost in masked regions → V.01.01 abrasive blast; if runs/cream swirls exist → V.02 chemical.

Distinguishing criteria

- vs. M.01/M.02 mechanical: Mechanical defects show directional grooves/swirl with SC-1/SC-2 and chip-flank sparkle; Co.02.01 is planar sheen shift, typically SC-0.
- vs.
- vs. Ch.03 mineral staining/etch: Mineral systems show ringed halos/runs and can be SC-1/SC-2; roller ghosting lacks wetting geometry and remains lot-repetitive.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across band transitions; overview frames capturing parallelism and pitch. Record distance/angle in-frame.
- Face ID + MSRT.
- Lot/replication check. Where possible, document adjacent lites for repeated spacing/orientation (supports coating-intrinsic attribution).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-02-01-roller-pickup-line-ghosting-pyrolytic-line/

DSS-Co.02.02 | Coating Anomalies

Surface Rub / Scuff (Pyrolytic Hard-Coat Appearance Change)

Pyrolytic [hard-coat] low-E anomaly - contact/rub during handling/cleaning producing localized sheen shift or faint mottle on the coated face; generally planar optical change in the coating; typically SC-0, occasionally SC-1 where micro-imprint exists; confirm coated face before attribution

Diagnosis summary

Surface rub / scuff (pyrolytic) is an appearance change confined to pyrolytic (hard-coat) functional coatings where contact, wiping, or pad/roller kiss produces localized sheen shift or faint mottle without discrete linear chip flanks or pits. The effect is planar within the coating and is usually non-tactile. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 typical (planar optical change).
- SC-1 localized only if a very light micro-imprint/texture is present (e.g., pad weave ghost).
- Perform one light, non-marring pass on a small revealed test patch; polymer stylus only on suspected coated faces. MSRT supports classification only; do not abrade the coating.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT.
- CAT-1 (Benign / non-relief): Faint rub panel visible mainly at oblique/raking; SC-0. Indicative relief: 0-10 µm (optical only).
- CAT-2 (Light): Discernible sheen shift at standard distance in certain lighting; SC-0 (or SC-1 localized if micro-imprint present). Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable patch/panel at standard distance affecting uniformity; SC-0/SC-1. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: Parallel periodic bands at fixed pitch → Co.02.01 roller ghosting; linear chip-flank grooves → M.01 scoring; modeled chemical micro-texture with runs/meniscus → V.02/Ch.01; peppered.

Distinguishing criteria

- vs. Co.02.01 roller ghosting: Roller ghosting shows parallel bands with regular pitch; rub/scuff is localized with soft boundaries and no fixed pitch.
- vs. M.02 abrasion swirls: Abrasion swirls show directional/swirl patterning and often SC-1 across paths; Co.02.02 lacks coherent swirl geometry and remains largely SC-0.
- vs. Ch.03 mineral film/etch: Mineral systems show ring/run geometry and can be SC-1/SC-2; Co.02.02 is planar and non-ringed.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across rub panel boundary; overview frames to show localization. Record distance/angle in-frame.
- Face ID + MSRT. Confirm coated surface; MSRT (polymer stylus only) on revealed patch: record SC-class (SC-0 typical; SC-1 localized if present).
- Context notes. Handling/maintenance history; cleaning media used; adjacency to contact points (pads, rails, suction cups).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-02-02-surface-rub-scuff-pyrolytic-hard-coat-appearance-change/

DSS-Co.02.03 | Coating Anomalies

Local Coating Discontinuity (Pyrolytic Hard-Coat)

Pyrolytic [hard-coat] low-E anomaly - localized thin/void spot, streak, or island within the deposited film; planar optical discontinuity often with sharp or feathered boundary; typically SC-0, occasionally SC-1 at minute imprint; confirm coated face before attribution

Diagnosis summary

Local coating discontinuity (pyrolytic) is an appearance change confined to pyrolytic (hard-coat) functional coatings where the deposited film exhibits a localized reduction in thickness, skip/void, or density change. It presents as a spot, small island, short streak, or patch with distinct sheen/color shift relative to surrounding coated areas.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 typical (planar optical change within coating).
- SC-1 localized only if a minute micro-imprint exists (e.g., particulate contact imprint).
- Perform one light, non-marring pass on a small revealed test patch; polymer stylus only on suspected coated faces. MSRT supports classification only; do not abrade the coating.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT.
- CAT-1 (Benign / non-relief): Small faint spot/streak legible mainly at oblique/raking; SC-0. Indicative relief: 0-10 µm (optical only).
- CAT-2 (Light): Discernible discontinuity at standard distance in certain lighting; SC-0 (or SC-1 localized if micro-imprint). Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable patch at standard distance affecting uniformity over >0.5% of view area; SC-0/SC-1. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: Parallel periodic bands → Co.02.01 Roller pickup; localized sheen shift tied to wipe arcs → Co.02.02 Rub/Scuff; linear grooves with chip flanks → M.01 Scoring; ring/run/halo chemistry →.

Distinguishing criteria

- vs.
- vs. Mineral/chemical spots (Ch family): Chemical spots show ring/rim, runs, or micro-texture (SC-1/2); Co.02.03 is planar, SC-0, without wetting geometry.
- vs. Mechanical pad trails (M.02): Abrasion trails show directional texture and SC-1 over a path; Co.02.03 is localized and non-directional at micro-scale.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros showing boundary; overview frames documenting size and position. Record distance/angle in-frame.
- Face ID + MSRT. Confirm coated surface; MSRT (polymer stylus only) on revealed patch records SC-class (SC-0 typical; SC-1 localized if present).
- Lot/replication check. Inspect adjacent lites for coordinate/shape repetition to support intrinsic origin.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-02-03-local-coating-discontinuity-pyrolytic-hard-coat/

DSS-Co.03.01 | Coating Anomalies

AR Bloom / Scuff (Anti-Reflective & Other Optical Films)

Thin-film optical stack anomaly - localized sheen/color shift or “bloom” on anti-reflective (AR) / IR-control / glare-reduction films; typically planar, non-tactile; SC-0, occasionally SC-1 where micro-imprint exists; confirm coated face before attribution

Diagnosis summary

AR bloom/scuff is an appearance change confined to thin-film optical coatings (anti-reflective, IR, glare-reduction). It manifests as localized increases in reflectivity (“bloom”), haze, or color cast shift relative to adjacent areas. Effects are planar within the coating and usually non-tactile. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 typical (planar optical change).
- SC-1 localized only if a minute texture imprint exists (pad weave/foreign dust imprint).
- Perform one light, non-marring pass on a small revealed test patch; polymer stylus only on suspected coated faces. MSRT supports classification only; do not abrade the coating.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT.
- CAT-1 (Benign / non-relief): Faint bloom/scuff visible mainly at oblique/raking; SC-0. Indicative relief: 0-10 µm (optical only).
- CAT-2 (Light): Discernible reflectivity/color shift at standard distance in certain lighting; SC-0 (or SC-1 localized if micro-imprint). Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable patch/panel at standard distance affecting uniform appearance; SC-0/SC-1. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: Parallel periodic bands → Co.02.01 Roller pickup; wipe-arc linked on pyrolytic → Co.02.02 Rub/Scuff (pyrolytic); linear grooves with chip flanks → M.01 Scoring; rings/runs → Ch.01/Ch.03.

Distinguishing criteria

- vs.
- vs. Sputtered low-E patchiness (Co.01.02): Low-E color non-uniformity may be lot-scale and non-contact-specific; AR bloom/scuff is localized with contact/wipe context.
- vs. Mineral/chemical films (Ch family): Chemical films exhibit rings/runs and can yield SC-1/2; AR bloom is planar, ringless, usually SC-0 after reveal.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across patch boundary; broad specular comparison frames (inside vs. outside patch).
- Face ID + MSRT. Confirm AR/optical coated face; MSRT (polymer stylus only) on a revealed patch to record SC-class (SC-0 typical; SC-1 localized if present).
- Context notes. Handling/maintenance history, cleaners/media used, adjacent contact points (pads/cups/rails).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-03-01-ar-bloom-scuff-anti-reflective-other-optical-films/

DSS-Co.03.02 | Coating Anomalies

Hard-Coat Micro-Mottle (Other Functional Films)

Thin/“hard” functional films other than low-E-e.g., AR hybrids, IR-control, solar-control, anti-glare-showing fine planar mottle/texture in the coating; non-directional, patchy reflectance or color micro-variation; typically SC-0, rarely SC-1 where minute imprint exists; confirm coated face before attribution

Diagnosis summary

Hard-coat micro-mottle is an appearance change confined to functional hard films (non-pyrolytic low-E alternatives, AR/IR hybrids, solar/anti-glare coatings) presenting as fine, non-directional mottle-a subtle patchwork of reflectance or color within the coated area. The effect is planar within the coating and usually non-tactile. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 typical (planar optical variation).
- SC-1 localized only if a minute contact imprint (pad weave/foreign dust) coincides with mottled zone.
- Perform one light, non-marring pass on a small revealed test patch; polymer stylus only on suspected coated faces. MSRT supports classification only; do not abrade the coating.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT.
- CAT-1 (Benign / non-relief): Very faint mottle legible mainly at oblique/raking; SC-0. Indicative relief: 0-10 µm (optical only).
- CAT-2 (Light): Discernible micro-mottle at standard distance in certain lighting; SC-0 (or SC-1 localized if micro-imprint). Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable mottled panel at standard distance, affecting uniformity; SC-0/SC-1. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: Parallel periodic bands → Co.02.01 Roller pickup; wipe-arc-linked → Co.02.02 Rub/Scuff (pyrolytic) or Co.03.01 AR bloom; linear grooves with chip flanks → M.01 Scoring; rings/runs →.

Distinguishing criteria

- vs. AR bloom/scuff (Co.03.01): AR bloom often shows distinct reflectivity increase with contact context; Co.03.02 is a fine, non-directional mottle that may be process-intrinsic.
- vs. Pyrolytic rub/scuff (Co.02.02): Pyrolytic rubs are localized wipe/contact panels; Co.03.02 lacks wipe geometry and can appear lot-distributed.
- vs. Mineral/chemical films (Ch family): Chemistry shows rings/runs and may yield SC-1/2; Co.03.02 is planar, ringless, typically SC-0.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across mottle boundary; broad specular comparison (inside vs. outside zone). Record distance/angle in-frame.
- Face ID + MSRT. Confirm functional coated face; MSRT (polymer stylus only) on a revealed patch to record SC-class (SC-0 typical; SC-1 localized if present).
- Context notes. Lot repetition (intrinsic) vs. isolated (handling/cleaning); cleaners/media used; storage/stacking history.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-03-02-hard-coat-micro-mottle-other-functional-films/

DSS-Co.04.01 | Coating Anomalies

Mottle / Cloudiness (Spandrel & Back-Paint Systems)

Back-paint/ceramic-coated opacity system anomaly - non-uniform opacity or “clouding” visible in reflection/transmission (as designed); planar within paint/frit layer on non-viewable side; typically SC-0 from glass side; confirm system build and coated face before attribution

Diagnosis summary

Mottle/cloudiness (spandrel/back-paint) is an appearance change confined to opaque or semi-opaque coatings applied to the non-viewable side of glass (e.g., spandrel back-paint, ceramic frit behind glass, back-coated vision bands). It presents as patchy opacity/density variation, clouding, or tone shifts that are planar within the back-coating and typically non-tactile from the glass side.

Field identification cues

- Surface-catch class (MSRT)
- From the viewing (glass) side, SC-0 (planar change behind the glass).
- Do not perform MSRT on the back-coating face in situ. MSRT supports classification only on the viewing surface.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry (from the viewing side). Depth values below are apparent optical, not substrate relief.
- CAT-1 (Benign / non-relief): Faint cloudiness legible mainly at oblique/raking; SC-0 at the viewing surface. Indicative relief: 0-10 µm (optical only).
- CAT-2 (Light): Discernible mottle at standard distance in specific lighting; SC-0 viewing surface. Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable non-uniformity at standard distance affecting perceived uniformity across a field; SC-0 viewing surface. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: If features show ring/run geometry on the viewing face → consider Ch family; if linear chip-flank grooves are present → M.01 scoring; if peppered fused nodules are visible → Th.01 hot.

Distinguishing criteria

- vs. Vision-lite coating anomalies (Co.02/Co.03): Spandrel/back-paint presents on non-vision/opaque zones and reads as opacity density change, not AR/low-E interference shifts.
- vs. Chemical films (Ch): Chemistry on the viewing face shows rings/runs/etch and may yield SC-1/2; Co.04.01 remains planar SC-0 on the viewing surface.
- vs. Abrasion fields (M.02): Abrasion has directional texture and SC-1; spandrel mottle lacks surface relief.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; broad specular and ambient back-lit frames to show density differences; raking macros confirming smooth viewing surface.
- Face/System ID. Confirm spandrel/back-paint face and system build (shop drawings, submittals).
- MSRT (viewing surface only). SC-0 expected; record result to distinguish from surface abrasion or chemical attack.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-04-01-mottle-cloudiness-spandrel-back-paint-systems/

DSS-Co.04.02 | Coating Anomalies

Pinholes / Holidays (Spandrel & Back-Paint Systems)

Back-paint/ceramic-frit opacity system anomaly - discrete clear points/voids or ultra-thin spots within the opaque layer; reads through glass from viewing side; planar from glass surface; SC-0 at viewing face; confirm system build and coated face before attribution

Diagnosis summary

Pinholes/holidays (spandrel/back-paint) are discrete, point-like voids or ultra-thin spots in an opaque or semi-opaque coating applied to the non-viewable side of the glass (e.g., spandrel back-paint, ceramic frit). From the viewing face they present as tiny bright/clear dots (transmission) or high-reflectance specks (reflection). The defect is planar behind the glass and non-tactile at the viewing surface.

Field identification cues

- Surface-catch class (MSRT)
- At the viewing (glass) surface: SC-0 (planar defect behind glass).
- Do not perform MSRT on the back-coating face in situ. MSRT supports classification only on the viewing surface.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and count/density of pinholes. Depth values are apparent optical, not substrate relief.
- CAT-1 (Benign / non-relief): Few, very fine pinholes legible mainly in oblique/back-lit conditions; SC-0 viewing surface. Indicative optical relief: 0-10 µm (apparent).
- CAT-2 (Light): Scattered pinholes visible at standard distance under common lighting; SC-0; aesthetic but limited area. Indicative optical: ~10-40 µm.
- CAT-3 (Moderate): Clusters/bands of pinholes affecting perceived uniformity across >0.5% area or along critical sightlines; SC-0. Indicative optical: ~40-120 µm.
- Reclassify when: If points correspond to front-face pits or fused nodules → Th.01 hot particle; if ring/halo chemistry appears on viewing face → Ch family; if linear grooves exist → M.01.

Distinguishing criteria

- vs. Mineral peppering (Ch.03): Mineral peppering shows ring/flow context and may be SC-1/2; Co.04.02 pinholes are planar behind glass and SC-0 at the viewing surface.
- vs. Hot particle embed (Th.01.02): Hot particle shows fused hemispheres/craters on the exposed face; Co.04.02 points are clear windows through an opaque back-coat.
- vs. AR/low-E pinholes (Co.01.03): Functional low-E pinholes occur on vision coatings and affect interference color; spandrel pinholes occur in opaque fields and read as bright dot windows.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; back-lit frames to make clear points evident; raking macros verifying smooth viewing surface.
- Face/System ID. Confirm spandrel/back-paint face and system build (submittals/shop drawings).
- MSRT (viewing surface only). Record SC-0 to distinguish from front-face mechanical/chemical attack.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-04-02-pinholes-holidays-spandrel-back-paint-systems/

DSS-Co.04.03 | Coating Anomalies

Back-Paint Adhesion Loss Islands

Back-paint/ceramic-frit opacity system anomaly - localized loss of adhesion or cohesive failure within the back-coating forming “islands,” blisters, or lift at edges; reads through glass from viewing side; typically SC-0 at viewing face; confirm system build and coated face before attribution

Diagnosis summary

Back-paint adhesion loss islands are localized detachments (adhesive or cohesive) within an opaque/semi-opaque back-coating on the non-viewable side of glass (e.g., spandrel paint, back-coated vision bands, ceramic frit overcoats). From the viewing face they present as duller/darker or brighter windows, contour-edged islands, or blisters;

Field identification cues

- Surface-catch class (MSRT)
- At the viewing (glass) surface: SC-0 (planar defect behind the glass).
- Do not perform MSRT on the back-coating face in situ. MSRT supports classification only on the viewing surface.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and areal extent/progression (from the viewing side). Depth values below are apparent optical, not substrate relief.
- CAT-1 (Benign / non-relief): Few, small islands/blisters (<5 mm), legible mainly at oblique/raking; SC-0 viewing surface; no edge propagation.
- CAT-2 (Light): Scattered islands visible at standard distance; cumulative affected area ≤0.5% of the field; SC-0 viewing surface.
- CAT-3 (Moderate): Clusters/bands or edge-propagating islands affecting perceived uniformity >0.5% or along critical sightlines; localized clear voids may be present; SC-0 viewing surface.
- Escalation / reclassify: If front-face chemical rings/runs coexist → also classify Ch family; if front-face grooves/pits present → M/Th families.

Distinguishing criteria

- vs. Pinholes/holidays (Co.04.02): Pinholes are point-voids with sharp, tiny dots; adhesion-loss islands are larger lobed patches or blisters with contoured boundaries.
- vs. Spandrel mottle (Co.04.01): Mottle is cloud-like density variation without discrete boundaries/blister domes.
- vs. Front-face chemistry (Ch): Chemical attack shows rings/runs/etch at the viewing surface and can yield SC-1/2; Co.04.03 remains SC-0 on the viewing face.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across island edges/blisters; back-lit frames for clear voids; document edge origin if present.
- Face/System ID. Confirm back-paint/frit face and system build (submittals/shop drawings). Note adjacent gaskets/rails/adhesives that may contribute.
- MSRT (viewing surface only). Record SC-0 to distinguish from front-face mechanical/chemical attack.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-04-03-back-paint-adhesion-loss-islands/

DSS-Co.05.01 | Coating Anomalies

Frit Smears / Offset

Ceramic frit anomaly - directional “drag,” smudge, or registration shift of the fired frit pattern; planar behind the viewing surface; typically SC-0 at the viewing face. Confirm frit face, artwork intent, and location before attribution.

Diagnosis summary

Frit smears/offset are appearance changes within a fired ceramic frit pattern (dots/lines/graphics) where the intended edges are dragged, feathered, or shifted relative to the artwork. The anomaly is planar in the frit layer (usually on a non-viewing face such as #2 or #4) and non-tactile from the viewing surface. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- From the viewing (glass) side: SC-0 (planar behind glass).
- Do not MSRT the frit face in situ. MSRT supports classification only on the viewing surface.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and pattern fidelity impact (edge clarity, offset magnitude). Depth values are apparent optical, not substrate relief.
- CAT-1 (Benign / non-relief): Minor feather/drag legible mainly at oblique/raking; edge blur □ 0.1 dot diameter or line gain □ 10%; SC-0.
- CAT-2 (Light): Discernible smear/offset at standard distance in common lighting; offset □ 0.25 dot diameter (or line gain 10-25%) over limited area; SC-0.
- CAT-3 (Moderate): Pane-noticeable smear/offset at standard distance affecting graphic intent over ≥0.5% of the visible field; offset ~0.25-0.5 dot diameter or line gain >25%; SC-0.
- Reclassify when:

Distinguishing criteria

- vs. Back-paint mottle (Co.04.01): Mottle is cloud-like density variation; Co.05.01 shows geometric edge drag/offset tied to artwork.
- vs. AR/low-E anomalies (Co.02/Co.03): Functional films lack ink dot/line geometry and registration cues.
- vs. Abrasion fields (M.02): Abrasion creates directional micro-texture at the viewing face (often SC-1); Co.05.01 is SC-0 at the viewing face and edge-geometry-specific.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; macro frames of dot/line edges showing drag or offset; overview establishing vector direction and area.
- System ID. Confirm frit face (surface #), pattern spec (dot size/spacing/line weight), lot/date; obtain shop drawings/submittals if available.
- MSRT (viewing face). Record SC-0 to distinguish from front-face mechanical/chemical attack.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-05-01-frit-smears-offset/

DSS-Co.05.02 | Coating Anomalies

Pinholes / Voids (Ceramic Frit)

Ceramic frit anomaly - discrete clear points or micro-voids within the fired frit field; reads through glass from the viewing side; typically SC-0 at the viewing face. Confirm frit face, artwork intent, and location before attribution.

Diagnosis summary

Frit pinholes/voids are discrete, point-like clearings or ultra-thin spots occurring within a fired ceramic frit pattern (dots/lines/solid fields). From the viewing face they appear as tiny bright/clear points in transmission or sparkle points in reflection. The defect is planar within the frit layer (commonly on #2 or #4) and non-tactile at the viewing surface.

Field identification cues

- Surface-catch class (MSRT)
- At the viewing (glass) surface: SC-0 (defect is behind the viewing face in the frit layer).
- Do not MSRT the frit face in situ. MSRT supports classification only on the viewing face.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and count/density within critical sightlines. Depth values are apparent optical, not substrate relief.
- CAT-1 (Benign / non-relief): Few, very fine pinholes legible mainly at oblique/back-lit; SC-0 viewing face; cumulative affected area negligible.
- CAT-2 (Light): Scattered pinholes visible at standard distance in common lighting; SC-0; cumulative area ≤0.5% of the frit field.
- CAT-3 (Moderate): Clusters/bands or repeatable rows visible at standard distance affecting perceived uniformity >0.5% area or along critical sightlines/margins; SC-0.
- Reclassify when:

Distinguishing criteria

- vs. Back-paint pinholes (Co.04.02): Both read as bright points, but system and location differ; confirm ceramic frit vs. organic back-paint and face.
- vs. Mineral peppering (Ch.03): Mineral systems show ring/run wetting geometry and may yield SC-1/2; Co.05.02 is ringless and SC-0 at the viewing face.
- vs. Surface abrasion pitting (M/Th): True surface pits exhibit SC-1/2 and micro-crater morphology at the viewing face; frit pinholes remain planar behind glass.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; back-lit frames to reveal points; macro/raking frames confirming smooth viewing surface.
- System ID. Confirm frit face, pattern spec, lot/date; obtain shop drawings/submittals if available.
- MSRT (viewing face). Record SC-0.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-05-02-pinholes-voids-ceramic-frit/

DSS-Co.05.03 | Coating Anomalies

Frit Over-Spray / Edge Ghost

Ceramic frit anomaly - faint halo, fog, or particulate fringe extending beyond the intended frit boundary after application/firing; reads through glass from the viewing side; typically SC-0 at the viewing face. Confirm frit face, mask lines, and artwork intent before attribution.

Diagnosis summary

Frit over-spray / edge ghost is an appearance change where fine frit particulates or mist extend just outside the intended frit edge (mask/screen boundary), producing a narrow, edge-parallel halo or ghost fringe after firing. The condition is planar within the fired frit layer (usually on #2 or #4) and non-tactile from the viewing surface. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- From the viewing (glass) side: SC-0 (planar defect behind the glass).
- Do not MSRT the frit face in situ. MSRT supports classification only on the viewing surface.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and halo prominence/extent. Depth values are apparent optical, not substrate relief.
- CAT-1 (Benign / non-relief): Very faint halo legible mainly at oblique/raking; halo width □ 2-3 mm; SC-0 viewing face.
- CAT-2 (Light): Discernible fringe at standard distance in common lighting; halo width ~3-6 mm or moderate density along limited lengths; SC-0.
- CAT-3 (Moderate): Pane-noticeable halo at standard distance along long edges/corners, width □ 6-8 mm or high density compromising edge crispness over ≥0.5% of visible field; SC-0.
- Reclassify when:

Distinguishing criteria

- vs. Roller pickup (Co.02.01): Roller ghosting shows panel-spanning parallel bands at fixed pitch, not edge-tied halos.
- vs. Back-paint edge fog (Co.04.01): Similar halo can occur in back-paint; confirm system and face to avoid mis-attribution.
- vs. Chemical halos (Ch family): Chemistry presents rings/runs/wetting geometry and may yield SC-1/2; Co.05.03 is edge-parallel, ringless, and SC-0 at the viewing face.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across the edge transition; overview frames showing edge length and uniformity.
- System ID. Confirm frit face, mask/artwork specification, lot/date; obtain shop drawings/submittals if available.
- MSRT (viewing face). Record SC-0 to distinguish from front-face mechanical/chemical attack.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-co-05-03-frit-over-spray-edge-ghost/

DSS-M.01.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Scraper/Razor Scoring

Mechanical scoring on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

Linear score(s) produced by blades/scrapers/razors or sharp edges contacting the glass face, typically presenting bright “chip flanks”/micro-chipping along the line in raking light. Distinct from coating anomalies (area sheen/colour change) and from non-directional residue films. Terminology for micro-chipping and chip flank follows VIS §3;

Field identification cues

- Surface-catch class (MSRT)
- SC-2 (clear) is common for true blade scores; shallow grazes may read SC-1 (slight). Perform one light, non-marring pass only; MSRT supports classification, not acceptance.
- Reveal / lighting / geometry
- Complete Non-Invasive Reveal (distilled/neutral-pH water, lint-free microfiber; no blades/abrasives/chemicals before evaluation). Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) under raking light.

Classification, severity and scope

- CAT-2 - Light: Narrow, fine-edged lines with SC-1, no pronounced chip flanks; limited impact at standard view.
- CAT-3 - Moderate: SC-2 with minor chip flanks; line(s) noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong); rough chip flanks, possible pits/craters; distinctly visible at standard and wide-field views.

Distinguishing criteria

- vs. Coating anomalies (Co-family): Coating rub/patch/colour shift is area-based, SC-0/SC-1, and lacks chip flanks; worked-surface coating anomalies are not permitted at acceptance.
- vs. Residue films/overspray (R-family): Residues change with reveal; a true score persists.
- vs. Glass-on-glass tracks (M.01.03): Tracks often appear as paired arcs/lines with alternating intensity; confirm chip flanks for scraper scoring.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames of the line showing chip flanks without a worked transition edge.
- MSRT result: Record SC class (often SC-2); one pass, non-marring.
- Forms: Pane ID; surface numbering; worked surface Y/N; geometry checklist; photos attached (per VIS Appendix X3 fields).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-01-01-scraper-razor-scoring/

DSS-M.01.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Straightedge / Metal-Guide Scoring

Mechanical scoring on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

Long, ruler-straight linear score(s) produced when a scraper/razor or other hard edge rides along a metal straightedge/guide on the glass face. Typically presents bright “chip flanks” / micro-chipping along the line in raking light; persists after reveal and does not behave like a residue film. Terminology for micro-chipping and chip flank per VIS §3;

Field identification cues

- Surface-catch class (MSRT):
- Commonly SC-2 (clear) for true guide-assisted scores; shallow grazes may read SC-1 (slight). One light, non-marring pass only; MSRT supports classification, not acceptance.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal (distilled/neutral-pH water; lint-free microfiber; no blades/abrasives/chemicals prior to evaluation).

Classification, severity and scope

- Assign CAT by visibility convention and MSRT outcome under VIS inspection-use chip-flank severity to distinguish depth bands:
- CAT-2 - Light: Narrow, clean-edged line(s) with SC-1, no pronounced chip flanks; limited impact at standard view.
- CAT-3 - Moderate: SC-2 with minor chip flanks; noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip flanks, possible pits/craters; distinctly visible at standard and wide-field views.
- (Use the VIS three-part cueing: surface catch + edge/surface morphology + location/access.

Distinguishing criteria

- vs. Scraper/Razor scoring (M.01.01): Hand-free scores often show arcs/variable directionality; guide scores are ruler-straight with consistent depth and may have parallel repeats.
- vs. Glass-on-glass tracks (M.01.03): Tracks commonly present paired arcs/lines with travel-path periodicity; guide scores are single or parallel straight runs.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames of the line showing chip flanks (no worked transition edge).
- MSRT result: Record SC class (often SC-2); one pass, non-marring.
- Forms: Pane ID; surface numbering; worked surface Y/N; geometry checklist; photos attached (per VIS Appendix X3 fields).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-01-02-straightedge-metal-guide-scoring/

DSS-M.01.03 | Mechanical Abrasion, Scoring, Impact & Cracking

Glass-on-Glass Track (paired arcs/lines)

Mechanical tracking on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

Paired, often parallel arcs or lines produced when a glass lite contacts/moves against another glass surface or a similarly hard, smooth element (e.g., stacked lite, cart rail with glass contact). Presents as directional linear paths; depth may range from faint polish disturbance to tactile scoring with micro-chipping (“chip flanks”) visible in raking light.

Field identification cues

- Surface-catch class (MSRT):
- SC-1 (slight) for shallow track polish/lineation; SC-2 (clear) where chip flanks/micro-chipping occur. Perform one light, non-marring pass only; MSRT supports classification, not acceptance.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal (distilled/neutral-pH water; lint-free microfiber; no blades/chemicals) before evaluation. Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) with raking light, per VIS.

Classification, severity and scope

- Assign CAT by visibility convention and MSRT with the three-part cueing (surface catch + morphology + location):
- CAT-2 - Light: Narrow, clean lines/paired arcs with SC-1, no pronounced chip flanks; limited impact at standard view.
- CAT-3 - Moderate: SC-2 with minor chip flanks; track(s) noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip flanks, local pits/craters; distinctly visible at standard and wide-field views.
- (Classification is appearance-based; acceptance is handled separately in VIS §6.)

Distinguishing criteria

- vs. Scraper/Razor scoring (M.01.01): Scraper lines are often single, ruler-straight or hand-guided; glass-on-glass tracks typically occur as paired arcs/lines following a sweep path.
- vs. Straightedge/guide scoring (M.01.02): Guide scores are ruler-straight with consistent depth; tracks usually show arc geometry and periodic intensity along travel.
- vs. Residue films/overspray (R-family): Residues change with Non-Invasive Reveal; true tracks persist.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames of the paired lines showing edge morphology (chip flanks if present) and no worked.
- MSRT result: Record SC class (SC-1 / SC-2 as observed); one pass, non-marring.
- Forms: Pane ID; surface numbering (#1-#4 / laminate-internal); worked surface Y/N; geometry checklist; photos attached (per VIS Appendix X3 fields).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-01-03-glass-on-glass-track/

DSS-M.01.04 | Mechanical Abrasion, Scoring, Impact & Cracking

Conveyor/Belt Line Scoring (handling line)

Mechanical scoring on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

Long, transport-direction linear lines/bands produced when a lite slides or oscillates on a conveyor/belt/handling rail during fabrication, glazing, or site handling. Presents as directional linear scoring that is often bay-to-bay continuous, sometimes in parallel sets at consistent spacing; in raking light, edges can show bright “chip-flanks”/micro-chipping when depth increases.

Field identification cues

- Surface-catch class (MSRT):
- SC-1 (slight) for shallow transport marks; SC-2 (clear) when scoring with chip-flanks is present. MSRT = one light, non-marring pass to support classification (not acceptance).
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal; then evaluate at 12 / 36 / 72 in with normal incidence + oblique sweep (~60°-120°) under raking light, per VIS. Record distances/angles in the photo frames.

Classification, severity and scope

- Assign CAT by visibility convention + MSRT and edge/morphology (three-part cueing in VIS):
- CAT-2 - Light: Fine, clean-edged lines with SC-1; no pronounced chip-flanks; limited impact at standard view.
- CAT-3 - Moderate: SC-2 with minor chip-flanks; noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip-flanks, occasional pits/craters; distinctly visible at standard and wide-field views.
- (Classification is appearance-based; acceptance governed separately by VIS §6.)

Distinguishing criteria

- vs.
- vs. Glass-on-glass tracks (M.01.03): Tracks are frequently paired arcs/lines reflecting sweep/pivot; conveyor lines are transport-direction runs and may repeat across lites.
- vs. Residue films/overspray (R-family): Residues change with Non-Invasive Reveal; scoring persists. (Apply VIS reveal + geometry.)

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking.
- MSRT result: Record SC class (SC-1 or SC-2 as observed); one pass, non-marring.
- Forms: Pane ID; surface numbering (#1-#4 / laminate-internal); worked surface Y/N; geometry checklist; reveal status; lighting/time; attach photos-per VIS Appendix X3.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-01-04-conveyor-belt-line-scoring-handling-line/

DSS-M.01.05 | Mechanical Abrasion, Scoring, Impact & Cracking

Hardware / Fastener Drag Line

Mechanical scoring on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

Localized, directional linear line(s) or short runs created when hardware/fasteners/metal fittings (e.g., screw heads, rail/spider fittings, brackets) contact and move across the glass face, leaving a mechanical score. In raking light the line often exhibits bright “chip-flanks” / micro-chipping where depth increases; it persists after Non-Invasive Reveal (clean & dry) and is not a removable film.

Field identification cues

- Surface-catch class (MSRT):
- Commonly SC-2 (clear) for true metal-on-glass scores; SC-1 (slight) when shallow. Perform one light, non-marring pass only; MSRT supports classification, not acceptance.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal before evaluation (clean & dry). Assess at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) under raking light, per VIS. Record distances/angles in the photo frames.

Classification, severity and scope

- Assign CAT by visibility convention and MSRT outcome at VIS viewing/lighting; apply the VIS three-part cueing (surface catch + edge/surface morphology + location/access):
- CAT-2 - Light: Narrow, clean-edged line(s) with SC-1, no pronounced chip-flanks; limited impact at standard view.
- CAT-3 - Moderate: SC-2 with minor chip-flanks; noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip-flanks, possible pits/craters; distinctly visible at standard and wide-field views.

Distinguishing criteria

- vs. Straightedge/guide scoring (M.01.02): Guide scoring is ruler-straight over long runs; hardware drag lines are localized near contact points and often short-run.
- vs. Glass-on-glass tracks (M.01.03): Tracks present paired arcs/lines along a sweep path; hardware drag lines are single, local, originating at hardware.
- vs. Residue films/overspray (R-family): Residues change with Non-Invasive Reveal; mechanical scores persist. Apply VIS reveal + geometry.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames of the line showing edge morphology (chip-flanks if present) and no worked transition.
- MSRT result: Record SC class (SC-1 / SC-2 as observed); one pass, non-marring; on suspected coated faces, prefer polymer stylus.
- Forms: Pane ID; surface numbering (#1-#4 / laminate-internal); worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-01-05-hardware-fastener-drag-line/

DSS-M.02.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Micro-Abrasion Swirls / Pad Trails (non-linear)

Mechanical abrasion field on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

A non-linear, repetitive swirl or looping trail produced by contact pads, cloths, or small tools traversing the glass face, leaving a fine, directional micro-abrasion field. Under raking light, the field reads as swirls/arcs and may present “modeled micro-texture” (subtle milky relief) when depth increases.

Field identification cues

- Surface-catch class (MSRT):
- Often SC-0 to SC-1 for very fine swirl (non-tactile to slight); SC-2 when the field contains tactile lines with micro-chipping/chip flanks. Perform one light, non-marring pass only; MSRT supports classification, not acceptance.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal (distilled/neutral-pH water; lint-free microfiber; no blades/abrasives/chemicals before evaluation). Inspect at 12 / 36 / 72 in, normal incidence + oblique sweep (~60°-120°) with raking light, per VIS.

Classification, severity and scope

- Assign CAT by visibility convention and MSRT outcome, applying the VIS three-part cueing (surface catch + morphology + location/access):
- CAT-1 - Faint: SC-0 / SC-1; non-tactile swirls, no chip flanks, and no localized edge; read mainly in raking light; do not localize at acceptance geometry.
- CAT-2 - Light: SC-1; clean-edged fine lines or light micro-texture; limited visibility at standard view.
- CAT-3 - Moderate: SC-2 (clear) elements within the swirl field or modeled micro-texture noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip-flank segments, pits/craters, or a broad matte/frosted field visible at standard and wide-field views.

Distinguishing criteria

- vs. Residue films/overspray (R-family): Residues change with Non-Invasive Reveal; true micro-abrasion persists. vs.
- vs. Squeegee burn lines (M.02.05): Squeegee burns are typically linear along pull paths; swirls are looped/curvilinear.
- vs. Coating anomalies (Co-family): Coating rub/patch/colour shift is area-based, often SC-0/SC-1, and lacks chip flanks; coating anomalies on the worked face are not permitted at acceptance.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames showing the swirl geometry and edge morphology (confirm absence/presence of chip flanks).
- MSRT result: Record SC class (SC-0 / SC-1 / SC-2 as observed); one pass, non-marring; on suspected coated faces, prefer polymer stylus or rely on visual cues.
- Forms: Pane ID; surface numbering (#1-#4 / laminate-internal); worked surface Y/N; functional-coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-02-01-micro-abrasion-swirls-pad-trails-non-linear/

DSS-M.02.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Cross-Hatch Scuffing / Sanding Pattern (non-linear)

Mechanical abrasion field on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

A non-linear, intersecting lattice of fine lines produced by hand pads, sanding media, or abrasive cloths moving in overlapping, multi-directional passes, leaving a cross-hatched abrasion field. In raking light the field reads as criss-crossed micro-lines; with increasing depth, portions show modeled micro-texture (subtle milky relief) and may include micro-chipping (“chip flanks”) on some strokes.

Field identification cues

- Surface-catch class (MSRT):
- SC-0 / SC-1 for very fine cross-hatch (non-tactile to slight); SC-2 (clear) where individual strokes exhibit chip flanks or where the field shows tactile lineation.
- Reveal / lighting / geometry:
- Complete Non-Invasive Reveal (distilled/neutral-pH water; lint-free microfiber; no blades/abrasives/chemicals before evaluation).

Classification, severity and scope

- Assign CAT by visibility convention + MSRT + edge/morphology (VIS three-part cueing):
- CAT-1 - Faint: SC-0 / SC-1; fine cross-hatch without chip flanks; reads mainly in raking light; does not localize at acceptance geometry.
- CAT-2 - Light: SC-1; clean-edged fine lineation or light micro-texture; limited visibility at standard view.
- CAT-3 - Moderate: Portions of the field show SC-2 (clear) or modeled micro-texture noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip-flank segments, pits/craters, or a broad matte/frosted field distinctly visible at standard and wide-field views.

Distinguishing criteria

- vs. Micro-abrasion swirls/pad trails (M.02.01): Swirls present looped/curvilinear trails; cross-hatch shows intersecting straight/oblique passes forming a lattice.
- vs. Burnish/haze field (M.02.04): Burnish reads as broader, non-directional sheen shift; cross-hatch retains discernible stroke geometry under raking.
- vs. Residue films/overspray (R-family): Residues change with Non-Invasive Reveal; true abrasion persists.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames showing cross-angle stroke geometry and edge morphology (note presence/absence of chip.
- MSRT result: Record SC class (SC-0 / SC-1 / SC-2 as observed); one pass, non-marring; on suspected coated faces, prefer polymer stylus or rely on visual cues.
- Forms: Pane ID; surface numbering (#1-#4 / laminate-internal); worked surface Y/N; functional-coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-02-02-cross-hatch-scuffing-sanding-pattern-non-linear/

Damage Specification Standards
Printable classification one-sheet

DSS-M.02.03 | Mechanical Abrasion, Scoring, Impact & Cracking

Directional Webbing (repetitive paths)

Mechanical abrasion field on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

A repeating, directional network of fine lines formed by a tool, pad, or abrasive traversing the glass in overlapping, semi-regular paths, producing a “spider webbed” pattern (linear/curvilinear strands with recurring orientation). Under raking light, strands may show edge sparkle; at higher severity, portions exhibit modeled micro-texture (subtle milky relief) and chip-flanks on some strokes.

Field identification cues

- Semi-regular strands (sometimes grid-like or mesh-like) with dominant direction and secondary cross-paths, spanning hand-sized patches or larger zones.
- Strongest in raking & oblique views, persists after Non-Invasive Reveal (clean & dry). Field Identification Cues (Normative)
- Surface-catch class (MSRT):
- Commonly SC-1 for shallow webbing; SC-2 (clear) where strands exhibit chip-flanks or tactile lineation. Conduct one light, non-marring pass only; MSRT supports classification, not acceptance.

Classification, severity and scope

- Assign CAT via VIS visibility convention + MSRT outcome + edge/morphology (three-part cueing):
- CAT-1 - Faint: SC-0 / SC-1, non-tactile webbing; reads mainly in raking light; no chip-flanks, does not localize at acceptance geometry.
- CAT-2 - Light: SC-1, clean-edged fine lineation; limited visibility at standard view.
- CAT-3 - Moderate: Portions show SC-2 (clear) and/or modeled micro-texture noticeable at standard distance.
- CAT-4 - Severe: SC-2 (clear-to-strong) with rough chip-flanks, pits/craters, or broad matte/frosted sectors distinctly visible at standard and wide-field views.

Distinguishing criteria

- vs. Cross-hatch scuffing (M.02.02): Cross-hatch is a lattice/X-weave of intersecting strokes; directional webbing shows dominant travel paths with more mesh-like continuity.
- vs. Micro-abrasion swirls (M.02.01): Swirls are looped/curvilinear clusters; webbing is path-oriented with repetitive, directed strands.
- vs. Residue films/overspray (R-family): Residues change with Non-Invasive Reveal; true mechanical webbing persists.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking; add macro frames of strand geometry and edge morphology (presence/absence of chip-flanks), and show no.
- MSRT result: Record SC class (SC-0 / SC-1 / SC-2 as observed); one pass, non-marring; for suspected coated faces, prefer polymer stylus or rely on visual cues.
- Forms: Pane ID; surface numbering (#1-#4 / laminate-internal); worked surface Y/N; functional-coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-02-03-directional-webbing-repetitive-paths/

DSS-M.02.04 | Mechanical Abrasion, Scoring, Impact & Cracking

Burnish / Haze Field (localized over-polish)

Mechanical abrasion field on the worked surface - appearance-based classification; acceptance per VIS §6

Diagnosis summary

A localized, non-uniform change in sheen/clarity produced by over-refinement or frictional over-polish (pad/cloth/tool held and worked in place), creating a subtle micro-texture that scatters light. Under raking light, the area reads as a matte or milky field (modeled micro-texture) that persists after Non-Invasive Reveal (clean & dry).

Field identification cues

- Patch-like haze (coin- to hand-sized) with soft perimeter; strongest in raking and oblique sweep views.
- May present faint directional bias from tool motion; at higher severity a ring/edge (transition edge) demarcates the worked area. Field Identification Cues (Normative)
- Surface-catch class (MSRT):
- Often SC-0 to SC-1 (non-tactile to slight) for low-severity burnish; SC-2 (clear) if localized micro-texture exhibits tactile relief. Perform one light, non-marring pass; MSRT supports classification, not acceptance.

Classification, severity and scope

- Assign CAT per VIS visibility convention + MSRT + morphology (three-part cueing):
- CAT-1 - Faint: SC-0 / SC-1; low-contrast haze, no transition edge, not localized at acceptance geometry.
- CAT-2 - Light: SC-1; discernible micro-texture with clean perimeter, limited visibility at standard view.
- CAT-3 - Moderate: SC-2 (clear) micro-texture noticeable at standard distance; perimeter may begin to read as a transition edge.
- CAT-4 - Severe: SC-2 (clear-to-strong) with broad matte/frosted field and a visible transition edge distinctly readable at standard and wide-field views.

Distinguishing criteria

- vs. Micro-abrasion swirls / pad trails (M.02.01): Swirls show looped trails; burnish is a patch-like field with softer geometry.
- vs. Cross-hatch scuffing (M.02.02): Cross-hatch shows intersecting strokes; burnish lacks discrete lineation.
- vs. Roller wave / optical features (P.01.01): Roller wave is pane-scale, periodic, SC-0; burnish is localized and may show a transition edge.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-02-04-burnish-haze-field-localized-over-polish/

DSS-M.02.05 | Mechanical Abrasion, Scoring, Impact & Cracking

Squeegee Burn Lines (Friction Film)

Mechanical / Abrasion Fields - Non-linear; often residue-assisted friction mark rather than true relief

Diagnosis summary

Narrow, linear or banded appearance change that follows squeegee travel paths during window cleaning. Typically a friction-film or light burnish produced by dry/dirty rubber, residue-lubricant mismatch, or excessive pressure. Presents primarily as a visibility cue under raking/oblique light; may be non-tactile (film) or show trace relief where the surface has been lightly burnished.

Field identification cues

- Surface-catch class (MSRT):
- SC-0 (film only) to SC-1 (trace burnish); one, light, non-marring pass only to sense relief-do not abrade. Prefer a polymer stylus on suspected coated faces.
- Reveal/lighting/geometry:
- Inspect after Non-Invasive Reveal (clean & dry). View at 12 in, 36 in, 72 in at normal incidence and by 60°-120° oblique sweep under raking light.

Classification, severity and scope

- If post-reveal cue remains visible but non-tactile → trend CAT-1 (faint/non-relief film/transfer).
- If trace relief is detected (SC-1) with clean, fine edges and no chip flanks → CAT-2 (light).
- Presence of chip flanks, pits/craters, or modeled micro-texture elevates to CAT-3/4 per morphology (mechanical abrasion rather than mere film).
- If fixed parallax indicates between-pane look-alike → CAT-5 (out of in-place scope by location).

Distinguishing criteria

- vs. Detergent/surfactant film (R.04.01): films respond to reveal; true burnish persists post-reveal.
- vs. Micro-abrasion swirls / pad trails (M.02.01): swirls are arcuate/cross-hatch and not strictly linear; squeegee burn follows straight pulls and window edges.
- vs. Coating rub/patchiness (Co.01/Co.03): coating anomalies are on coated worked surfaces and are disallowed at acceptance on coated faces; document coating presence in Forms:

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in at normal + oblique; include raking frames that show linearity parallel to squeegee travel; include a straight-edge reflection for alignment.
- MSRT result: record SC-0/SC-1 (single, non-marring pass; polymer stylus on suspected coatings).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-02-05-squeegee-burn-lines-friction-film/

DSS-M.03.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Edge Micro-Chipping (minor)

Mechanical - perimeter/arris

Diagnosis summary

Small, bright edge fractures or “nicks” at or just inside the perimeter arris. Under raking light they present as sparkly facets; at higher severities they may form short “chip flanks” pointing into the face. “Micro-chipping” and “chip flank” are defined in VIS terminology and used here strictly as appearance/morphology cues (classification is appearance-only).

Field identification cues

- Pinpoint to sub-millimetre chips along the edge/arris; isolated or lightly scattered.
- Bright, faceted reflections in raking views; little to no continuous lineation across the face.
- More visible on dark backdrops; persistence after a Non-Invasive Reveal (clean & dry). Field Identification Cues (Normative)
- Surface-catch class (MSRT): SC-1 (slight) to SC-2 (clear) when the stylus traverses a chip that intrudes onto the exposed face.

Classification, severity and scope

- CAT-2 (Light): Small, shallow chips with SC-1 and clean edges, minimal visibility at standard view.
- CAT-3 (Moderate): Clear catch (SC-2) and minor chip flanks; noticeable at standard view.
- CAT-4 (Severe): Pronounced flanks and/or gross edge chipping extending onto the face; pits/craters present.
- CAT-5 (Out of in-place scope): If indicators show the condition is between panes/inaccessible (fixed parallax in IGU) → CAT-5 by location; refer per protocol.

Distinguishing criteria

- vs. Seamed/arris edge texture (P.03.01): Factory arris shows a uniform frosted band or fine grind lines with SC-0 on the adjacent face and no chip-flank sparkle. Do not conflate with damage.
- vs. Edge grind/polish pattern (P.03.02): Uniform, edge-parallel grind/polish appearance, SC-0 on the face; no bright chip facets.
- vs. Linear scoring (M.01): Scoring forms extended lines across the face with clear catch; micro-chipping appears as discrete edge nicks rather than a continuous track.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of representative chips and at least one context frame showing overall edge continuity.
- MSRT result: Record SC-class (none/slight/clear) with one light, non-marring pass; on coated faces, prefer polymer stylus.
- M.03.01 - Edge Micro-Chipping (minor): Discrete, bright micro-chips along the perimeter arris observed under VIS geometry; MSRT on the adjacent face records SC-1/SC-2 at.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-03-01-edge-micro-chipping-minor/

DSS-M.03.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Edge Gross Chipping / “Clamshell”

Mechanical - edge & corner damage

Diagnosis summary

Gross edge chipping (“clamshells”) are discrete, larger shell-type fractures at or near the perimeter, typically from impact, improper handling, or stress at drilled/notched features. Classification is appearance-only per VIS; restoration methodology is out of scope. Inspect under VIS lighting/geometry and record surface numbering and worked-surface status on Forms:

Field identification cues

- Surface-catch class (MSRT)
- Clear detect at chip perimeter; perform one light, non-marring pass only to sense relief (SC-2). On coated faces, prefer polymer stylus or rely on visual/location cues per VIS §5.5.
- Visual signature
- Rough chip flanks with bright, irregular fracture edges; may include pits/craters adjacent to the edge land or hole perimeter. (Chip-flank/rough-edge morphology is determinative for escalation from minor edge nicks.)

Classification, severity and scope

- Assign category by appearance cues + MSRT (not by intent to repair):
- CAT-2 → CAT-3 (lower bound): Larger, shallow shell with slight-clear catch and relatively clean flanks; visible primarily in raking light at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (typical): Pronounced clamshell(s) with clear catch; rough, bright chip flanks; noticeable at standard view. Indicative depth: ~40-100 µm.
- CAT-4 (upper bound): Deep/extended shelling, multiple chips with secondary pits/craters or short cracks; strong catch; clearly visible at standard & wide-field views. Indicative depth: ~100-250 µm+.
- CAT-5 (by location/condition): Any case with through-thickness cracking, moving pane in frame, or between-pane/inaccessible location → out of in-place scope; document and refer.

Distinguishing criteria

- vs.
- vs. Drill/slot exit lip (P.03.04): A continuous exit-side burr/lip is a manufacturing artifact at hole/slot perimeter; escalate only if discrete face-side chips propagate from the exit.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of chip flanks and at least one context frame showing the edge location (or hole/slot) and.
- MSRT result: Record SC class (typically SC-2 “clear”); one pass only; non-marring; polymer stylus preferred on suspected coated faces.
- Forms: Pane ID; product family + surface numbering; worked surface Y/N; functional coating present on worked surface (Y/N/Unknown); reveal status; lighting/time; geometry.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-03-02-edge-gross-chipping-clamshell/

DSS-M.03.03 | Mechanical Abrasion, Scoring, Impact & Cracking

Corner Crush / Corner Spall

Mechanical - edge & corner damage

Diagnosis summary

Corner crush / corner spall are localized, shell-type losses at the glass corner/near-corner arris caused by impact, handling, or bearing stress. They present as irregular clamshells and faceted fracture surfaces; short, radial micro-cracks may be present. Classification here is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Expect SC-2 (clear) at the chip perimeter when the loss intrudes onto the exposed face. Perform one light, non-marring pass only per VIS §5.5; do not abrade or “probe.” Prefer a polymer stylus on suspected coated faces.
- Visual signature
- Irregular clamshell geometry with rough, bright fracture edges; may show short micro-cracks radiating from the corner or from hardware-related stress points (if applicable). Distinguish from uniform factory edge finishes.

Classification, severity and scope

- Assign category by appearance + MSRT + morphology (three-part cueing under VIS); depth values below are indicative only:
- CAT-2 → low CAT-3 (lower bound): Small, shallow shell intruding minimally onto the face; SC-1-SC-2; mainly a raking-light cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (typical): Pronounced clamshell with clear catch and bright, rough chip flanks; noticeable at standard view. Indicative depth: ~40-120 µm.
- CAT-4 (upper bound): Deep/extended spall with secondary pits/craters and/or short cracks; clear/strong catch, clearly visible at standard and wide-field views. Indicative depth: ~120-300 µm+.
- CAT-5 (by location/condition): Between-pane/inaccessible or structural integrity indicators (active cracks, moving pane) → out of in-place scope; document and refer per project protocol.

Distinguishing criteria

- vs. Edge micro-chipping (M.03.01): Micro-chips are tiny, isolated nicks with less face intrusion; gross spalls show larger shell faces and rough flanks.
- vs. Factory seamed/arris edge (P.03.01) or edge grind/polish pattern (P.03.02): Factory features are uniform, edge-bound and read SC-0 on the face; no discrete chip flanks.
- vs. Drill/slot exit lip (P.03.04): Exit lips are continuous burrs confined to hole/slot perimeters; escalate only if discrete face-side chips propagate from the feature.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of chip flanks and at least one context frame showing corner location and any absence/presence of a.
- MSRT result: Record SC class (SC-0 / SC-1 / SC-2 as observed). One pass, non-marring; on suspected coated faces use polymer stylus or rely on visual cues.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-03-03-corner-crush-corner-spall/

DSS-M.03.04 | Mechanical Abrasion, Scoring, Impact & Cracking

Edge “Shelling” at Hardware Holes/Slots

Mechanical - edge & corner damage at penetrations

Diagnosis summary

Edge “shelling” at hardware holes/slots is a localized shell-type loss that originates at the perimeter of a drilled hole or machined notch and intrudes onto the exposed face. It is distinct from a factory exit-lip (a uniform burr confined to the hole/slot perimeter that reads SC-0 on the face and is not damage). Classification here is appearance-only per VIS; restoration methodology is out of scope.

Field identification cues

- Surface-catch class (MSRT)
- Expect SC-2 (clear) where shelling intrudes onto the face.
- Visual signature
- Bright, rough chip flanks at the penetration edge with discrete shell geometry; distinguish from a uniform exit-lip that is edge-confined and SC-0 on the face.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing under VIS). Depths below are indicative to anchor the spectrum:
- CAT-2 → low CAT-3 (lower bound): Small, shallow shells just breaking onto the face; SC-1-SC-2; primarily a raking-light cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (typical): Pronounced shelling with clear catch and bright, rough chip flanks; noticeable at standard view. Indicative depth: ~40-120 µm.
- CAT-4 (upper bound): Deep/extended shelling with secondary pits/craters and/or short cracks propagating from the penetration; strong catch; clearly visible at standard & wide-field views.
- CAT-5 (by location/condition): Between-pane/inaccessible or integrity indicators (active cracks, moving pane) → out of in-place scope; document and refer per project protocol.

Distinguishing criteria

- vs. Factory drill/slot exit-lip (P.03.04): Exit-lip is a uniform burr confined to the hole/slot, reads SC-0 on the face, and shows no chip-flank morphology. Do not classify as damage.
- vs. Linear scoring (M.01): Scoring forms extended lines across the face; an exit-lip/shelling is peripheral to a hole/slot. If scoring is present, classify under M.01 in addition.
- vs. Coating anomalies (Co.01/Co.03): Worked-face coating rub/patchiness is disallowed at acceptance on coated faces (VIS §6.2.e); shelling shows fracture morphology at a penetration.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, with raking macros of the penetration edge showing chip flanks and at least one context frame proving the condition.
- MSRT result: Record SC class (SC-0/1/2 as observed). One pass, non-marring; prefer polymer stylus on suspected coated faces.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-03-04-edge-shelling-at-hardware-holes-slots/

DSS-M.04.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Impact Divot (non-through)

Mechanical - localized contact/impact; no through-thickness break

Diagnosis summary

A non-through impact divot is a localized indentation/pit on the exposed surface caused by a blunt contact or small projectile that does not result in a through-thickness crack or star-break. Classification here is appearance-only per VIS (method-agnostic). Inspect under VIS lighting/geometry, after Non-Invasive Reveal, and record surface numbering and worked-surface status on Forms

Field identification cues

- Surface-catch class (MSRT)
- Expect SC-1 (slight) for shallow dimples; SC-2 (clear) where a defined crater rim/chip flanks are present.
- Visual signature
- Localized pit/crater with bright rim and no continuous lineation; if chip flanks or peppered satellites appear, escalate severity by morphology (see CAT mapping).

Classification, severity and scope

- Assign category by appearance + MSRT + morphology (three-part cueing under VIS). Depth figures below are indicative to anchor the spectrum:
- CAT-2 (Light): Shallow dimple with SC-1; clean crater edge, no chip flanks; mainly a raking-only cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (Moderate): Pronounced pit with SC-2 (clear); minor chip flanks and/or modeled micro-texture around the rim; noticeable at standard view. Indicative depth: ~40-120 µm.
- CAT-4 (Severe): Deep crater with rough, bright flanks, peppered micro-pits, or adjacent crater field; clearly visible at standard & wide-field views. Indicative depth: ~120-300 µm+.
- CAT-5 (by location/condition): If integrity indicators are present (active cracks, star-break, moving pane) or the cue is between panes/inaccessible, record CAT-5 and refer.

Distinguishing criteria

- vs.
- vs. Open inclusion (“open stone,” P.02.03): An open stone can mimic a crater but relates to a processing inclusion; use MSRT + reveal and look for irregular inclusion boundary vs.
- vs. Linear scoring (M.01): Scoring forms extended lines/tracks with clear catch; an impact divot is localized.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of the crater rim and at least one context frame establishing isolation (i.e., not a field of.
- MSRT result: Record SC-class (SC-0/1/2) with one light, non-marring pass; polymer stylus preferred on suspected coated faces.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification: https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-04-01-impact-divot-non-through/

DSS-M.04.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Star Break / Bullseye Initiation (annealed/laminated)

Mechanical - impact-initiated fracture pattern

Diagnosis summary

Star breaks / bullseye initiations are impact-origin fracture patterns characterized by a central origin with radial and/or circumferential cracking. For annealed or laminated architectural glass, the presence of active cracks or a star-type network constitutes an integrity indicator and is out of in-place restoration scope under VIS (CAT-5). Classification here is appearance-only; methodology is out of scope.

Field identification cues

- Surface-catch class (MSRT)
- Do not perform MSRT across an open crack network. If needed, a single light, non-marring pass may be used adjacent to the origin only to sense any crater rim (SC-class), but MSRT is auxiliary and never determinative for integrity.
- Visual signature
- Radial arms emanating from a point origin; may include a small crater/pit with bright rim in raking light. Any through-thickness or running crack is an integrity indicator.

Classification, severity and scope

- Assign category by appearance + integrity (three-part cueing applies; VIS):
- CAT-5 (default for this entry): Active cracks / star or ring network present in annealed or laminated glass → Non-Repairable / Out of Scope for In-Place Restoration.
- Reassign only if no cracking is present: If examination confirms no cracks and only a localized pit/divot exists, classify under M.04.01 Impact Divot (CAT-2/3/4 by morphology + MSRT).
- CAT assignment is appearance/condition-based; acceptance is separate (VIS §6).

Distinguishing criteria

- vs. Impact divot (M.04.01): A divot shows a localized crater rim without a radial crack network. Any running/radial arm(s) → this entry (CAT-5).
- vs. Pellet/BB impact signature (M.04.03): Pellet strikes on annealed/laminated often initiate star patterns; if cracks are present, treat as CAT-5 by integrity.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of the origin and arms; at least one context frame showing pane edges/corners and no worked.
- MSRT result: If a crater is present, you may record SC-class adjacent to the origin without crossing cracks; one light, non-marring pass only; polymer stylus on suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-04-02-star-break-bullseye-initiation-annealed-laminated/

DSS-M.04.03 | Mechanical Abrasion, Scoring, Impact & Cracking

Pellet / BB Impact Signature

Mechanical - high-velocity localized impact

Diagnosis summary

A pellet/BB impact is a high-velocity, localized strike that produces a central crater/divot and may initiate radial cracking or a bullseye/star pattern depending on glass type and energy. Classification here is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Shallow pellets may read SC-1 (slight); pronounced craters show SC-2 (clear) at the rim. Perform one light, non-marring pass only; polymer stylus preferred on suspected coated faces. MSRT supports classification, not acceptance.
- Visual signature
- Localized pit/crater with bright, rough flanks; if radial arms or a running crack are present, treat as integrity (see CAT mapping).

Classification, severity and scope

- Assign category by appearance + MSRT + morphology (three-part cueing under VIS). Depth figures are indicative to anchor the spectrum:
- CAT-2 (Light): Small crater with SC-1, clean rim, no chip flanks, no cracks; mainly a raking-only cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (Moderate): Pronounced crater with SC-2 (clear); minor chip flanks and/or nearby modeled micro-texture; noticeable at standard view; no cracks. Indicative depth: ~40-120 µm.
- CAT-4 (Severe): Deep crater with rough, bright flanks, peppered satellites; clearly visible at standard & wide-field views; no cracks. Indicative depth: ~120-300 µm+.
- CAT-5 (by integrity/location): Any radial/star cracking, running edge crack, or moving pane → CAT-5 (non-repairable/out of in-place scope). Between-pane presentation by fixed parallax → CAT-5 by location.

Distinguishing criteria

- vs.
- vs. Star break/bullseye initiation (M.04.02): If star network is evident, classify under M.04.02 (default CAT-5 by integrity).
- vs. Internal cavity artifacts (A-family): Desiccant fines/moisture/haze present between panes and show fixed parallax; do not respond to reveal on #1/#4. Treat as CAT-5 by location.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of the crater rim (and any satellites) and at least one context frame showing proximity to.
- MSRT result: Record SC-class (SC-0/1/2) with one light, non-marring pass at the rim (not across any cracks). Prefer polymer stylus on suspected coated faces.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-04-03-pellet-bb-impact-signature/

DSS-M.04.04 | Mechanical Abrasion, Scoring, Impact & Cracking

Tool Strike / Ladder Foot Imprint

Mechanical - localized contact/press/drag imprint; may include abrasion + transfer

Diagnosis summary

A tool strike / ladder foot imprint is a localized contact mark on the exposed surface produced by pressed/dragged equipment (e.g., ladder feet, tool bodies, scaffold components). It may present as rectilinear pad outlines, paired tread prints, or blunted arcs consistent with press-and-slide. Classification is appearance-only per VIS (method-agnostic). Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- Transfer only: typically SC-0 (no catch).
- Scuff/abrasion present: SC-1 (slight) up to SC-2 (clear) along leading edges or grit tracks. Perform one light, non-marring pass only; prefer polymer stylus on suspected coated faces; MSRT supports classification, not acceptance.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing under VIS). Depth figures are indicative to anchor the spectrum:
- CAT-2 (Light): Transfer film with minimal micro-abrasion; SC-0 to SC-1; edges clean, no chip flanks; mainly a raking-only cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (Moderate): Pronounced scuff with SC-2 (clear) along the lead; minor chip flanks / modeled micro-texture; noticeable at standard view. Indicative depth: ~40-120 µm.
- CAT-4 (Severe): Deep abrasion lane and/or peppered pits/craters from entrained grit; rough, bright flanks; clear at standard & wide-field views. Indicative depth: ~120-300 µm+.
- CAT-5 (by location/condition): Between-pane/inaccessible by parallax, or integrity indicators (active cracks, pane movement) → CAT-5 (out of in-place scope).

Distinguishing criteria

- vs. Rubber/plastic transfer (Residues R.05): If reveal removes the mark and MSRT = SC-0, classify as residue/transfer, not surface damage. Retain photos and reclassify per VIS.
- vs. Linear scoring (M.01): Scoring forms long, continuous lines/tracks; ladder/tool imprints are localized pad geometries with short directional scuff.
- vs. Hot-particle peppering (Th.01): Thermal peppering shows distributed fused nodules/pits, not pad geometry; classify under Th.01 when fielded.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of the leading edge (to show chip-flank status) and at least one context frame showing pad/tread.
- MSRT result: Record SC class (SC-0/1/2) with one light, non-marring pass; polymer stylus on suspected coated faces. MSRT is supportive only.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-04-04-tool-strike-ladder-foot-imprint/

DSS-M.04.05 | Mechanical Abrasion, Scoring, Impact & Cracking

Hardware Contact Rub (spider/rail fittings)

Mechanical - localized abrasion + possible metallic transfer adjacent to hardware

Diagnosis summary

A hardware contact rub is a localized surface scuff/abrasion (often with metallic transfer) produced where point-supported fittings (e.g., spider arms, standoff discs) or rail clamps/brackets contact or are dragged across the lite. Classification here is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal and under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- Transfer-dominated: frequently SC-0 (no catch).
- Abrasion present: SC-1 (slight) up to SC-2 (clear) at the rub's leading edge. Perform one light, non-marring pass only; polymer stylus on suspected coated faces. MSRT supports classification, not acceptance.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing under VIS). Depth figures are indicative to anchor the spectrum:
- CAT-2 (Light): Transfer film with minimal micro-abrasion; SC-0 to SC-1; clean edges, no chip flanks; mainly a raking-only cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (Moderate): Pronounced scuff with SC-2 (clear) along the lead; minor chip flanks / modeled micro-texture; noticeable at standard view. Indicative depth: ~40-120 µm.
- CAT-4 (Severe): Deep abrasion lane and/or peppered pits/craters from entrained grit; rough, bright flanks; clear at standard & wide-field views. Indicative depth: ~120-300 µm+.
- CAT-5 (by location/condition): Between-pane/inaccessible by parallax or integrity indicators (active cracks, pane movement) → CAT-5 (out of in-place scope).

Distinguishing criteria

- vs. Rubber/plastic transfer (R.05): If reveal removes the mark and MSRT = SC-0, treat as residue, not surface damage; reclassify per VIS.
- vs. Linear scoring (M.01): Scoring forms long, continuous tracks; hardware rubs are localized rings/crescents or short arcs near fittings. Escalate to M.01 if extended lanes are present.
- vs. Coating anomaly (Co-family): Coating rub/patchiness lacks chip-flank fracture morphology and is not permitted on a coated worked surface at acceptance (VIS §6.2.e).

Documentation and inspection

- Photo set (VIS) 12 / 36 / 72 in, normal + oblique, include raking macros of the leading edge (to show chip-flank status) and at least one context frame showing the hardware.
- MSRT result Record SC-class (SC-0/1/2) with one light, non-marring pass; polymer stylus on suspected coated faces. MSRT is supportive only.
- Forms Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-04-05-hardware-contact-rub-spider-rail-fittings/

DSS-M.05.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Short FD Scratch Cluster

Mechanical - factory handling/wash-induced; multiple short, parallel lineations

Diagnosis summary

A short FD scratch cluster is a localized patch (typically hand-sized or smaller) of multiple short, generally parallel fine scratches produced by entrained grit/debris during factory washing/handling. Lines are co-oriented, often confined to a narrow zone, and persist after Non-Invasive Reveal. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Light clusters: SC-1 (slight); pronounced clusters: SC-2 (clear) where chip flanks are present. Perform one light, non-marring pass only; polymer stylus on suspected coated faces. MSRT supports classification, not acceptance.
- Visual signature
- Multiple short, co-oriented scratches within a compact area; no long, continuous lane. Look for consistent stroke width and fine debris satellites.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing under VIS). Depths below are indicative to anchor the spectrum:
- CAT-2 (Light): Fine, shallow lines; SC-1, clean edges, no chip flanks; mainly a raking-only cue at close/standard view. Indicative depth: ~0.2-1 µm.
- CAT-3 (Moderate): Clear catch (SC-2) on representative lines; minor chip flanks and/or modeled micro-texture; noticeable at standard view. Indicative depth: ~1-5 µm.
- CAT-4 (Severe): Rough, bright chip flanks, peppered pits/craters, or broad matte sectors within the cluster; distinct at standard & wide-field views. Indicative depth: ≥5 µm.
- CAT-5 (by location/condition): Between-pane/inaccessible by parallax, or integrity indicators (active cracks, moving pane) → CAT-5; document and refer.

Distinguishing criteria

- vs. Linear scoring / tracks (M.01): M.01 shows extended, continuous lines (sometimes pane-spanning); FD clusters are localized with short lineations.
- vs. Micro-abrasion swirls / pad trails (M.02.01): Swirls are looped/curvilinear; FD clusters are straight, co-oriented lines.
- vs. Residue films/overspray (R-family): Residues change with reveal and read SC-0; true FD lines persist and can read SC-1/SC-2.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros that resolve individual line edges (confirm presence/absence of chip flanks) and at least one.
- MSRT result: Record SC class (SC-0/1/2) with one light, non-marring pass on a representative line; polymer stylus on suspected coated faces. MSRT is supportive only.
- Forms: Pane ID; product family & surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-05-01-short-fd-scratch-cluster/

DSS-M.05.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Long FD Scratch Field

Mechanical - Fabrication Debris Scratches

Diagnosis summary

Pane-scale, predominantly parallel lineations caused by trapped/dragged fabrication debris during washing/handling, typically extending across large regions (often banded) rather than isolated short clusters. Classified by visual morphology and surface-catch response; methods of removal are outside scope.

Field identification cues

- Surface-catch class (MSRT): SC-1 to SC-2 typical; escalate to SC-3 when bright chip flanks/pitting accompany lines. Perform one light, non-marring pass per VIS §5.5; prefer polymer stylus on suspected coated faces.
- Visual signature: Long-run, near-parallel scoring that forms fields/bands rather than a single track; localized bright “edge sparkle” under raking light indicates increasing depth.
- Location/access: Record pane ID and surface numbering (#1-#4; laminate-internal). If fixed parallax shows the cue is between panes, classify CAT-5 (out-of-place scope).

Classification, severity and scope

- CAT-2 (Light): SC-1; narrow, clean-edged lines; limited impact at standard view.
- CAT-3 (Moderate): SC-2-SC-3; clear catch; minor chip flanks may appear; noticeable at standard view.
- CAT-4 (Severe): SC-3 with pronounced chip flanks, crater-pepper, or dense banding evident at wide-field views.
- CAT-5: Use only when location/condition places the defect out of in-place scope (e.g., IGU cavity).

Distinguishing criteria

- vs. Cutting skid lines (factory, edge-zone): Skid lines are short, edge-confined micro-lines; FD fields are long-run, pane-face bands that may escalate in catch.
- vs. Linear tracks (M.01): Single scraper/straightedge tracks present as one or a few distinct lines with consistent direction; FD fields present as many near-parallel lines forming bands.
- vs. Abrasion fields (M.02): Abrasion fields show webbing/swirls and broader texture; FD fields are dominantly linear/parallel.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique (~60°-120°); include raking-light frames.
- MSRT result: Record SC class (one pass, non-marring; polymer stylus on suspected coated faces).
- Forms: Pane ID; surface numbering; worked-surface Y/N; “coating present on worked surface?” Y/N/Unknown; reveal status; lighting/time; geometry checklist.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-05-02-long-fd-scratch-field/

DSS-M.05.03 | Mechanical Abrasion, Scoring, Impact & Cracking

Wash-Line Scratch Bands

Fabrication Debris / factory wash handling lines

Diagnosis summary

Parallel, height-consistent bands of linear surface scoring produced when particulates or trapped fines are carried across the lite by factory washing/handling equipment prior to or after heat-treating. Bands typically align perpendicular to glass travel and traverse significant widths of the face. Classification is appearance-based under VIS inspection conditions; acceptance is governed separately by VIS-A.

Field identification cues

- MSRT (Manual Surface-Relief Test) class - one light, non-marring pass only:
- SC-1 (slight) for shallow band sets;
- SC-2 (clear) where chip flanks are present on stronger lines. Numeric depth is not required for classification; prioritize MSRT class + morphology.
- Visual signature - multiple, co-planar lines forming a belt; some lines show clean edges, others exhibit micro-chipping/chip flanks under raking light. (Use VIS §5 lighting/geometry.)

Classification, severity and scope

- (Informative micrometer ranges are for context; classification does not require measurement.)

Distinguishing criteria

- vs. Long FD scratch field (M.05.02) - fields may wander; wash-line bands are elevation-consistent, often repeating across lites. (M.05 indexing.)
- vs. Conveyor/belt line scoring (M.01.04) - M.01.04 typically produces one or a few straight, travel-aligned tracks; wash-line bands present as stacked belts of lines at a set height.
- vs. Squeegee burn lines (M.02.05) - squeegee burns are friction films (haze) with SC-0 to SC-1 and no chip flanks; wash-line bands show line relief and may present chip flanks.

Documentation and inspection

- Photo set (VIS): 12/36/72 in; normal + oblique; include raking.
- MSRT result: Record SC-class (SC-1 / SC-2). Single non-marring pass; on suspected coated faces, prefer polymer stylus.
- Forms/Logs: Pane ID; surface numbering; worked surface Y/N; functional coating present on worked surface? (Y/N/Unknown); reveal status; lighting/time; geometry checklist.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-05-03-wash-line-scratch-bands/

Damage Specification Standards
Printable classification one-sheet

DSS-M.06.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Hole Edge Micro-Chips (excess)

Mechanical - drilling/notching-related; perimeter of penetrations

Diagnosis summary

Hole edge micro-chips (excess) are small, discrete chiplets at the perimeter of a drilled hole or machined slot that exceed normal manufacturing artifacts and/or intrude onto the exposed face. They present as bright faceted nicks; at higher severities, short chip flanks point inward from the perimeter. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Chips confined to the perimeter edge (no face intrusion): typically SC-0 at the face.
- Chips that break onto the face: SC-1 (slight) to SC-2 (clear) on a light, single non-marring pass. Prefer polymer stylus on suspected coated faces; MSRT supports classification, not acceptance.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing under VIS). Depth bands are indicative only-numeric measurement is not required.
- CAT-2 (Light): Few shallow micro-chips; SC-1 at intrusions; clean edges, no pronounced chip flanks; primarily a raking-only cue at close/standard view. Indicative depth: ~10-40 µm.
- CAT-3 (Moderate): More numerous chips with SC-2 (clear); minor chip flanks and occasional pepper; noticeable at standard view. Indicative depth: ~40-120 µm.
- CAT-4 (Severe): Dense ring/coalescing losses with rough, bright flanks, peppered pits, or incipient spalls; visible at standard & wide-field views. Indicative depth: ~120-300 µm+.
- CAT-5 (by location/condition): Through-thickness/running cracks, pane movement, or between-pane/inaccessible location → CAT-5 (non-repairable/out of in-place scope); document and refer.

Distinguishing criteria

- vs. Factory exit-lip (P.03.04): Exit-lip is a continuous burr confined to the hole/slot; face reads SC-0 and no discrete bright facets. Do not classify as damage.
- vs. Edge “shelling” at holes/slots (M.03.04): Shelling shows larger, crescent spalls breaking onto the face with clear flanks; micro-chips are small, discrete.
- vs. Linear scoring (M.01): Scoring forms extended tracks; hole-edge micro-chips are peripheral and localized.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros of representative micro-chips (resolve facet/flare) and at least one context frame showing the.
- MSRT result: Record SC-class (SC-0/1/2) with one light, non-marring pass on a representative chip that intrudes onto the face; polymer stylus on suspected coated faces.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-06-01-hole-edge-micro-chips-excess/

DSS-M.06.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Notch Root Micro-Cracks

Mechanical - drilling/notching-related; integrity cue

Diagnosis summary

Notch root micro-cracks are fine, crack-like fissures emanating from the root (inside radius) of a notch or cutout. They are integrity indicators: any confirmed cracking (even hairline) places the lite out of in-place restoration scope under VIS (CAT-5 by condition/location). Classification here is appearance-only; methodology is out of scope. Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- Do not pass a stylus across any suspected crack. If needed, a single light, non-marring pass adjacent to (not across) the root may be used to sense local surface relief from associated chips/lip for context.
- Visual signature
- Filament-thin, continuous line(s) emerging from the notch root that do not behave like surface scratches (no consistent flank sparkle; may traverse micro-texture without interruption).

Classification, severity and scope

- Assign category by appearance + integrity:
- CAT-5 (default for this entry): Any confirmed micro-crack at a notch root (visible continuity, branching, or propagation under angle/raking) → Non-Repairable / Out of In-Place Scope.
- Reassign only if no crack is present:
- If evaluation shows no fissure and only micro-chips/lip intruding onto the face → classify under M.06.01 Hole edge micro-chips (excess) or M.03.04 Edge “shelling” at holes/slots as appropriate.
- If the cue is a linear surface score (continuous lineation away from root) without crack characteristics → classify under M.01 Linear scoring.

Distinguishing criteria

- vs. Linear surface scratch at root: Scratches exhibit abrasive edges and MSRT catch; true micro-cracks can cross subtle texture without flank sparkle and may show tip blunting/branching.
- vs. Exit-lip / burr: Exit-lip is edge-confined, reads SC-0 on the face, and lacks a continuous filament extending into the glass.
- vs. Chip train: A train of tiny perimeter chips can appear dotted under low light; with raking, chips resolve to discrete facets rather than a continuous fissure.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of the notch root that resolve the continuous fissure (not just chip facets).
- MSRT note. If recorded, note SC class from an adjacent area only (do not cross the fissure); one light, non-marring pass; polymer stylus if coating is suspected.
- Forms: Pane ID; surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification: https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-06-02-notch-root-micro-cracks/

DSS-M.07.01 | Mechanical Abrasion, Scoring, Impact & Cracking

Edge-Origin Stress Crack (chip origin)

Mechanical - fracture initiating at edge/arris or at an edge chip

Diagnosis summary

An edge-origin stress crack is a through-thickness (or developing) crack that initiates at the edge/arris-often from a pre-existing edge chip (“origin chip”)-and propagates inward under mechanical or handling stress. Any confirmed crack is an integrity indicator and lies out of in-place restoration scope under VIS (CAT-5 by condition/location). Classification is appearance-only; methodology is out of scope.

Field identification cues

- Surface-catch class (MSRT)
- Do not pass a stylus across any suspected crack. If needed, a single light, non-marring pass adjacent to the origin chip may be used to sense local relief from chip facets (context only).
- Visual signature
- Unbroken, hairline fissure that can pass across faint surface texture without interruption; may display branching or feathering away from an edge chip origin.

Classification, severity and scope

- Assign category by appearance + integrity:
- CAT-5 (default): Any confirmed crack (edge-origin) → Non-Repairable / Out of In-Place Scope.
- Reassign only if no crack is present:
- If examination shows no fissure and only edge micro-chips/spalls → classify under M.03.01 / M.03.02 / M.03.03 as appropriate.
- If the cue is a linear surface scratch (abrasive, chip-flank sparkle, MSRT catch) without crack characteristics → classify under M.01 Linear scoring.

Distinguishing criteria

- vs. Edge micro-chipping/spall: Chips have faceted, sparkly flanks and are discrete; cracks are continuous, filament-thin and lack abrasive sparkle.
- vs.
- vs. Surface score: Scores exhibit MSRT catch and abrasive edges; cracks may pass through slight residues/texture without interruption and can show branching.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros that show the origin (edge or origin chip) and continuous fissure.
- MSRT note. If recorded, note adjacent SC-class only (do not cross the crack). One light, non-marring pass; polymer stylus if coating is suspected.
- Forms: Pane ID; surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-07-01-edge-origin-stress-crack-chip-origin/

DSS-M.07.02 | Mechanical Abrasion, Scoring, Impact & Cracking

Through-Thickness Crack Propagation

Mechanical - fissure extending through the lite; integrity cue

Diagnosis summary

A through-thickness crack is a continuous fissure that extends through the glass thickness (or is actively propagating toward full depth) and may branch, curve, or run under residual/operational stress. Any confirmed crack is an integrity indicator and is out of in-place restoration scope under VIS (CAT-5 by condition/location). Classification here is appearance-only; methodology is out of scope.

Field identification cues

- Surface-catch class (MSRT)
- Do not pass a stylus across any suspected crack. If needed, one light, non-marring pass adjacent to the feature may document nearby surface relief (for context only). MSRT is auxiliary and never determinative for integrity.
- Visual signature
- Unbroken, phase-stable line that can cross faint residues or micro-texture without interruption; may show tip sharpening in the propagation direction.

Classification, severity and scope

- Assign category by appearance + integrity:
- CAT-5 (default): Any confirmed through-thickness (or actively propagating) crack → Non-Repairable / Out of In-Place Scope.
- Reassign only if no crack is present:
- If the cue is an abrasive line (continuous score) with MSRT catch and chip-flank sparkle → classify under M.01 Linear scoring.
- If the cue is edge/penetration chipping without a continuous fissure → classify under M.03.01-M.03.04 or M.06.01 as appropriate.

Distinguishing criteria

- vs. Linear scratch/score: Scratches show abrasive edges and clear MSRT catch; cracks remain phase-stable, can cross faint films without losing continuity, and must not be stylus-tested.
- vs. Thermal stress crack (Th.03.01): Thermal origins often align with localized heating or solar hot-spot geometry; mechanism note may be added, but classification remains crack = CAT-5.
- vs. Star break (M.04.02): Star/bullseye networks are impact-origin crack systems; default CAT-5 by integrity.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros that show continuous fissure and origin (edge, corner, hole/notch, impact).
- MSRT note. If recorded, note adjacent SC-class only (do not cross the fissure); one light, non-marring pass; polymer stylus if a coating is suspected.
- Forms: Pane ID; surface numbering (#1-#4; laminate-internal); worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-07-02-through-thickness-crack-propagation/

DSS-M.07.03 | Mechanical Abrasion, Scoring, Impact & Cracking

Fragmentation Pattern (tempered fracture documentation)

Mechanical / integrity - safety glass “dice” pattern; out-of-scope for in-place restoration

Diagnosis summary

A fragmentation pattern documents the post-break state of a fully tempered (or heat-strengthened) lite that has fractured. Tempered fracture produces characteristic small, interlocking “dice”; heat-strengthened fracture produces larger, irregular islands with longer cracks. Any fractured lite is an integrity condition and is out of in-place restoration scope under VIS (CAT-5 by condition/location).

Field identification cues

- Do not perform MSRT on fractured glass. Treat the lite as unstable.
- Visual signature
- Tempered “dice”: dense, fine mosaic; difficult to trace a single crack long distance.
- Heat-strengthened: larger blocky islands; individual cracks run farther before turning.

Classification, severity and scope

- CAT-5 (default): Any fractured lite (tempered or heat-strengthened), regardless of fragment size or retention, is Non-Repairable / Out of In-Place Scope.
- Reassign only if unbroken: If re-inspection determines the pane is not fractured (e.g., a star-break in annealed/laminated without full fragmentation), classify under M.04.02 (impact star) or M.07.02.
- CAT is governed by integrity/location for cracks; acceptance is evaluated separately under VIS §6.

Distinguishing criteria

- vs. Annealed/laminated star break: Star/bullseye presents radial arms/rings without full “dice” mosaic. If only cracked (not fully fragmented), use M.04.02 / M.07.02 (still CAT-5).
- vs. Patterned privacy/etched glass: Decorative patterns can mimic a network from afar; raking light and touchless close visual confirm whether it’s a crack mesh vs. a surface pattern.
- vs. Surface films/residues: Films do not form polygonal, interlocking boundaries; a mosaic with edge lift or loose granules indicates fracture.

Documentation and inspection

- Safety & stabilization note. Confirm that the area is barricaded or the lite is secured per site protocol prior to close documentation.
- Photo set (VIS):
- Overall: 72 in and 36 in, normal incidence, capturing the full pane and adjacent framing/hardware.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-m-07-03-fragmentation-pattern-tempered-fracture-documentation/

DSS-Th.01.01 | Thermal / Hot Particle / Fusion & Thermal Stress

Welding Slag Spatter (fused nodules/pits)

Thermal / hot-particle impingement - fused metallic droplets and resultant pits

Diagnosis summary

Welding slag spatter presents as fused metallic nodules and/or resultant pits/craters formed when hot particles (weld spatter) impact and partially fuse to the glass, often followed by detachment leaving a pitted field. Classification is appearance-only per VIS; methodology is out of scope. Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- On fused nodules, a light, single pass typically yields SC-2 (clear); on detached pits, SC-1 to SC-2. Do not abrade; one non-marring pass only; polymer stylus if a coating is suspected.
- Visual signature
- Discrete, high-contrast nodules (sometimes metallic sheen) and sharp-edged micro-craters; bright chip-flank sparkle at pit edges under raking.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Numeric depth bands are indicative only-measurement is not required for classification.
- CAT-2 (Light): Sparse nodules/pits; SC-1 (slight) to SC-2 (clear) on a few features; visible mainly in raking at close/standard view. Indicative depth: ~20-60 µm (pit diameter typically ≤0.3 mm).
- CAT-3 (Moderate): Clustered field, numerous clear-catch pits with bright flanks; noticeable at standard distance. Indicative depth: ~60-150 µm; mixed nodules and detached pits.
- CAT-4 (Severe): Dense peppering / crater field, frequent fused nodules with rough micro-flanks, occasional micro-fracture lips at pit margins; visible at standard & wide-field.
- CAT-5 (by location/condition): Between-pane cues, active cracks, pane movement, or coating-side loss on the surface to be worked → CAT-5 (non-repairable/out of in-place scope).

Distinguishing criteria

- vs. Grinder spark embed (Th.01.02): Grinder pepper tends to be finer, more uniform; welding slag shows larger, irregular nodules/pits with higher local energy signatures.
- vs. Sand abrasion (E.02.01): Eolian matte is broad, directional micro-texture (field haze) rather than discrete fused droplets.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros resolving facet/halo at representative pits and at least one context frame showing proximity to.
- MSRT result: One light, non-marring pass on a representative nodule/pit; SC-class = SC-1/SC-2 as observed; polymer stylus where a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-01-01-welding-slag-spatter-fused-nodules-pits/

DSS-Th.01.02 | Thermal / Hot Particle / Fusion & Thermal Stress

Grinder Spark Embed (ferrous peppering)

Thermal / hot-particle impingement - fine ferrous particles embedded and/or pitting

Diagnosis summary

Grinder spark embed presents as a fine “peppered” field of ferrous particles ejected from metal grinding/cutting that impact, fuse, and/or oxidize on the glass. Some particles remain proud/fused; others detach leaving micro-pits. Classification is appearance-only per VIS; methodology is out of scope. Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- On retained specks and micro-pits, a single, light, non-marring pass typically yields SC-1 (slight) to SC-2 (clear) on representative features. Do not abrade; one pass only. Use a polymer stylus if a coating is suspected.
- Visual signature
- High-density field of minute, discrete points; many with tiny bright pit rims in raking light; lacks long continuous tracks of linear scoring.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth bands below are indicative only-numeric measurement not required for field classification.
- CAT-2 (Light): Sparse to light peppering, mostly SC-1 on select points; visible mainly at raking and close/standard view; limited field impact.
- CAT-3 (Moderate): Noticeable cluster fields with frequent SC-2 micro-pits and bright rims; clearly visible at standard distance; occasional retained specks. Indicative pit depth: ~40-120 µm.
- CAT-4 (Severe): Dense, widespread peppering; many clear-catch pits and intermittent fused nodules; readily apparent at standard and wide-field views. Indicative pit depth: ~120-300 µm+.
- CAT-5 (by location/condition): Between-pane cues, active cracks/pane instability, or confirmed functional-coating loss on the surface to be worked → CAT-5 (non-repairable/out of in-place scope).

Distinguishing criteria

- vs. Welding slag spatter (Th.01.01): Slag fields tend to include larger fused nodules and rougher craters; grinder pepper is finer, more uniform and more “dust-like.”
- vs. Linear scoring (M.01): Scoring forms continuous lines with abrasive chip-flank sparkle; peppering is discrete points without run-length.
- vs. Sand abrasion (E.02.01): Eolian abrasion appears as directional matte fields (non-discrete) and may show modeled micro-texture rather than discrete pits.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros that resolve pit rims/retained specks and at least one context frame showing proximity to grinding.
- MSRT result: One light, non-marring pass on a representative spot; record SC class (SC-1/SC-2 as observed). Prefer polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-01-02-grinder-spark-embed/

DSS-Th.01.03 | Thermal / Hot Particle / Fusion & Thermal Stress

Oxy-Fuel / Plasma Specking

Thermal / hot-particle impingement - oxidized micro-spatter and crater specks

Diagnosis summary

Oxy-fuel/plasma specking presents as fine to mixed-size hot-particle spatter from flame-cutting or plasma-cutting operations that impact and partially fuse to the glass, often oxidizing (dark/brown/blue tones) and/or detaching to leave micro-craters. Classification is appearance-only per VIS (method-agnostic). Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- Retained specks and micro-craters typically read SC-1 (slight) to SC-2 (clear) on a single, light, non-marring pass. Do not abrade; use a polymer stylus if a coating is suspected. MSRT supports classification, not acceptance.
- Visual signature
- Discrete, non-linear peppering with oxidized color notes on retained particles; micro-craters with bright, rough rims where detachments occurred.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Numeric depth ranges are indicative-measurement is not required for classification.
- CAT-2 (Light): Sparse/light peppering; mostly SC-1; visible primarily in raking at close/standard view. Indicative pit depth: ~20-60 µm; typical pit dia. ≤~0.3 mm.
- CAT-3 (Moderate): Noticeable clusters/fields with frequent SC-2 micro-craters and occasional retained, oxidized specks; clearly visible at standard distance. Indicative pit depth: ~60-150 µm.
- CAT-4 (Severe): Dense peppering, numerous clear-catch craters and intermittent fused nodules; readily apparent at standard & wide-field views. Indicative pit depth: ~150-400 µm+.
- CAT-5 (by location/condition): Between-pane/inaccessible by parallax, active cracks/pane instability, or confirmed functional-coating loss on the surface to be worked → CAT-5 (non-repairable/out of.

Distinguishing criteria

- vs. Welding slag spatter (Th.01.01): Slag often shows larger, irregular fused nodules; oxy-fuel/plasma specking trends finer with oxidation colors more evident on retained particles.
- vs. Grinder pepper (Th.01.02): Grinder fields are typically very fine and uniform, with fewer color tones; oxy-fuel/plasma can show a wider particle size spread and oxidized hues.
- vs. Linear scoring (M.01): Scores are continuous lines; specking is discrete points without run-length.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros that resolve pit rims/retained specks and at least one context frame showing proximity to the.
- MSRT result: One light, non-marring pass on a representative spot; record SC class (SC-1/SC-2 as observed). Prefer polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-01-03-oxy-fuel-plasma-specking/

DSS-Th.02.01 | Thermal / Hot Particle / Fusion & Thermal Stress

Torch Proximity Streaking (Heat Skid / Thermal Streaks)

Thermal - localized heat exposure; elongated tone/shine change ± shallow micro-texture

Diagnosis summary

Torch proximity streaking is a localized, elongated appearance change on the exposed face caused by nearby torch/heat tool use (e.g., soldering, brazing, roofing/flashing work). It presents as a streak or band of tone/shine shift and may include modeled micro-texture when the surface has been thermally softened. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 when the effect is purely optical/thermal tint or subtle gloss shift (no relief).
- SC-1 (slight) when very shallow micro-texture is present; SC-2 (clear) is uncommon but possible where softening produced minute relief. Perform one light, non-marring pass; polymer stylus if a coating is suspected.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth bands below are indicative-numeric measurement not required.
- CAT-1 (Benign / non-relief): Sheen/tone shift only, SC-0, no modeled texture; visible mainly in raking at close/standard view. Indicative relief: ~0-10 µm (optical only).
- CAT-2 (Light): Subtle modeled micro-texture, SC-1 (slight); limited impact at standard view; no chip flanks. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2) with visible modeled micro-texture at standard view; boundaries remain soft (no transition ring). Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted band due to thermal softening/devitrification; distinct at standard & wide-field views; still no pits/craters. Indicative relief: ~120-300 µm+.

Distinguishing criteria

- vs. Oxy-fuel/plasma/grinder pepper (Th.01.xx): Hot-particle damage shows discrete nodules/pits with bright rims; torch streaking is a continuous band without discrete pepper.
- vs. Linear scoring (M.01): Scoring forms continuous abrasive lines with chip-flank sparkle; torch streaks show modeled (non-directional) micro-texture or sheen shift.
- vs. Residue films (R-family): Soot and condensate remove at reveal (SC-0). Persisting core band suggests thermal effect → classify here.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros resolving any micro-texture; add context frames showing suspected heat source alignment.
- MSRT result: Record SC-class (SC-0/1/2) with one light, non-marring pass (polymer stylus if a coating is suspected).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-02-01-torch-proximity-streaking-heat-skid-thermal-streaks/

DSS-Th.02.02 | Thermal / Hot Particle / Fusion & Thermal Stress

Overheated Grinder/Belt Burn Line

Thermal + mechanical - friction heat band with gloss shift and possible shallow micro-texture

Diagnosis summary

An overheated grinder/belt burn line is a localized, elongated band produced when a powered abrasive (grinder, belt, pad, or wheel) is run against the glass (often inadvertently) long enough to generate frictional heat. The result is a tone/shine shift (and, at higher severities, modeled micro-texture/matte) along the tool path. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 when effect is optical only (gloss/tone shift without relief).
- SC-1 (slight) where very shallow micro-texture is present; SC-2 (clear) is uncommon but possible on severe overheats approaching frosted appearance. Perform one light, non-marring pass (polymer stylus if a coating is suspected).
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief values are indicative-no measurement required.
- CAT-1 (Benign/non-relief): Sheen/tone shift only; SC-0; visible primarily in raking at close/standard view. Indicative relief: ~0-10 µm (optical only).
- CAT-2 (Light): Subtle modeled micro-texture, SC-1; limited impact at standard view; boundaries remain soft. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2) with apparent modeled micro-texture at standard view; still no pits/craters, no chip flanks. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted lane from overheating/incipient devitrification; distinct at standard & wide-field views; no discrete pepper. Indicative relief: ~120-300 µm+.

Distinguishing criteria

- vs. Linear scoring (M.01): Scoring shows abrasive lines with chip-flank sparkle and SC-2 along edges; burn lines show modeled micro-texture/gloss shift with soft boundaries.
- vs.
- vs. Hot-particle peppering (Th.01.xx): Slag/sparks present discrete fused nodules or pits with bright rims; burn lines lack discrete pepper.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros resolving micro-texture within the band; add context frames showing tool path or nearby abrasive.
- MSRT result: Record SC-class (SC-0/1/2) with one light, non-marring pass; polymer stylus on suspected coated faces.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-02-02-overheated-grinder-belt-burn-line/

DSS-Th.03.01 | Thermal / Hot Particle / Fusion & Thermal Stress

Differential Heating Stress Crack (edge origin)

Thermal stress/shock - integrity cue; out of in-place scope

Diagnosis summary

A differential heating stress crack is a through-thickness (or actively propagating) fissure that initiates when nonuniform heating/cooling creates thermal stress exceeding glass strength, commonly at edges/corners or hardware penetrations. Any confirmed crack is an integrity condition and is out of in-place restoration scope (CAT-5 by condition/location). This DSS defines identification and documentation;

Field identification cues

- Surface-catch (MSRT).
- Do not pass a stylus across any suspected crack. If needed, a single light, non-marring pass adjacent to the origin chip/edge may document local relief context only. MSRT is auxiliary and never determinative for integrity.
- Visual signature
- Phase-stable, continuous filament that persists through small viewpoint shifts; unlike scratches, it can traverse faint films/texture without loss of continuity.

Classification, severity and scope

- CAT-5 (default): Any confirmed thermal stress crack (edge, corner, hole/notch, or hot-spot origin) → Non-Repairable / Out of In-Place Scope.
- Reassign only if no crack is present:
- If examination finds only surface abrasion (no fissure), classify under M.01 (linear scoring) or M.02 (abrasion fields) as appropriate.
- If it is solely edge micro-chips/spalls at a hole/notch without a continuous fissure, use M.06.01 / M.03.04.
- CAT is governed by integrity/location for cracks; acceptance is evaluated separately under VIS §6.

Distinguishing criteria

- vs. Linear surface scratch: Scratches exhibit abrasive edges with MSRT catch and chip-flank sparkle; cracks remain phase-stable and should not be stylus-tested.
- vs.
- vs. Laminate-internal feature / IGU artifact: Use parallax and reflection tracking to confirm ply/cavity location; internal = CAT-5 by location.

Documentation and inspection

- Safety. Ensure area is safe/stable before close documentation; avoid loading a cracked lite.
- Photo set (VIS):
- Overall: 72 in and 36 in, normal incidence, capturing the full fissure path and edges/corners/hardware.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-03-01-differential-heating-stress-crack-edge-origin/

DSS-Th.03.02 | Thermal / Hot Particle / Fusion & Thermal Stress

Spontaneous Tempered Break (NiS-related; documentation)

Thermal stress / material inclusion - post-fracture condition; out of in-place scope

Diagnosis summary

A spontaneous tempered break is a sudden fracture of fully tempered glass with no evident external impact, commonly associated with nickel sulfide (NiS) inclusions or residual/internal stresses. Result is the characteristic fine “dice” fragmentation. Any fractured lite is an integrity condition and is out of in-place restoration scope (CAT-5 by condition/location).

Field identification cues

- Safety / MSRT.
- Treat as unstable; do not perform MSRT. Secure area per site protocol before close documentation.
- Visual signature
- Fine, uniform dice pattern across the pane (distinct from heat-strengthened fracture, which shows larger islands/longer ligaments).

Classification, severity and scope

- CAT-5 (default): Any fractured tempered lite → Non-Repairable / Out of In-Place Scope. Document and refer per project protocol (replacement; manufacturer/engineer review).
- Reassign only if unbroken: If re-inspection shows no fragmentation (e.g., only a crack system), classify under M.07.02 (through-thickness crack) or M.04.02 (impact star) as appropriate-still integrity.
- CAT is governed by integrity/location; acceptance is evaluated separately under VIS-A §6.

Distinguishing criteria

- vs. Impact star/bullseye (M.04.02): Impact presents a central nucleus with radial/annular arms; spontaneous break lacks a clear impact origin.
- vs. Heat-strengthened fracture: Heat-strengthened glass forms larger, irregular fragments and longer crack ligaments-dice size is a key discriminator.
- vs. Patterned/etched glass: Decorative patterns lack polygonal, fractured boundaries and loose granules; raking light and gentle observation (no touch) confirm.

Documentation and inspection

- Safety & stabilization. Confirm barricades/support before close approach; avoid loading the fractured lite.
- Photo set (VIS):
- Overall: 72 in and 36 in, normal incidence, full pane + framing.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-03-02-spontaneous-tempered-break-nis-related-documentation/

DSS-Th.03.03 | Thermal / Hot Particle / Fusion & Thermal Stress

Local Heat Source Imprint (heaters / IR)

Thermal stress / localized radiant loading - appearance change ± integrity risk

Diagnosis summary

A local heat source imprint is a localized appearance change or crack initiation caused by near-field radiant or convective heating focused on the glass (e.g., space heaters, heat lamps, IR emitters, sun-facing radiant panels). It may present as a tonal/shine shift band or patch, a hot-spot nucleus, or-at higher severities-thermal stress cracking emanating from the heated locus.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for optical-only tonal/shine shifts with no relief.
- SC-1 for very shallow modeled micro-texture within the hot footprint; SC-2 is uncommon but possible with pronounced softening.
- Perform one light, non-marring pass; do not stylus across a suspected crack. Prefer polymer stylus on suspected coated faces. MSRT supports classification, not acceptance.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief ranges are indicative-measurement is not required.
- CAT-1 (Benign / non-relief): Sheen/tone shift only; SC-0; visible mainly in raking at close/standard view. Indicative relief: ~0-10 µm (optical).
- CAT-2 (Light): Subtle modeled micro-texture within the footprint; SC-1; limited impact at standard view; no chip flanks. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2) with visible modeled micro-texture at standard view; boundaries remain soft; no discrete pits. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted hot-spot or band due to softening/devitrification; distinct at standard & wide-field views; still no peppering. Indicative relief: ~120-300 µm+.

Distinguishing criteria

- vs. Torch proximity streak (Th.02.01): Torch streaks are elongated along a tool path; heater imprints are localized to a fixture footprint or radiant pattern.
- vs. Overheated grinder/belt burn (Th.02.02): Burn lines follow tool travel and may show rubber/compound smear; heater imprints align with stationary radiant geometry.
- vs. Hot-particle damage (Th.01.xx): Slag/sparks present discrete nodules/pits with bright rims; heater imprints are continuous patches/bands without discrete pepper.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of the footprint; add context frames showing the heater/IR source, mounting position, and.
- MSRT result: Record SC class (SC-0/1/2) with one light, non-marring pass (polymer stylus on suspected coated faces). Do not pass across any crack.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-03-03-local-heat-source-imprint-heaters-ir/

DSS-Th.04.01 | Thermal / Hot Particle / Fusion & Thermal Stress

Localized Thermal “Hot Spot” Imprint (Solar Concentration / Reflective Interactions)

Thermal - envelope interaction; localized radiant focus from adjacent surfaces

Diagnosis summary

A localized thermal “hot spot” imprint is a compact patch or band of appearance change (and, at higher severities, stress damage) produced when reflected or concentrated solar radiation from adjacent surfaces (e.g., concave façades, mirrored fins, metal panels, light shelves, vehicles) focuses on the glass. The result is a tone/shine shift ± modeled micro-texture within the focal footprint;

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for optical-only impressions (gloss/tone shift without relief).
- SC-1 where very shallow modeled micro-texture exists; SC-2 is uncommon but possible in pronounced softening.
- Perform one light, non-marring pass; use a polymer stylus if a coating is suspected. Do not pass across any suspected crack. MSRT supports classification, not acceptance.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief values below are indicative-measurement is not required.
- CAT-1 (Benign / non-relief): Sheen/tone shift only; SC-0; visible mainly in raking at close/standard view. Indicative relief: ~0-10 µm (optical only).
- CAT-2 (Light): Subtle modeled micro-texture within the hotspot; SC-1; limited impact at standard view; no chip flanks. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): SC-2 (clear) modeled micro-texture visible at standard view, boundaries soft; no discrete pits. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted hotspot or narrow focused band; distinct at standard & wide-field views; still no peppering. Indicative relief: ~120-300 µm+.

Distinguishing criteria

- vs. Torch proximity streak (Th.02.01): Torch produces tool-path bands and may leave soot; solar hotspot ties to external reflector geometry and time of day.
- vs. Overheated grinder/belt burn (Th.02.02): Burn lines track abrasive travel and often show compound/rubber smear; solar hotspots are stationary footprints that migrate with the sun.
- vs. Hot-particle damage (Th.01.xx): Slag/spark fields show discrete nodules/pits with bright rims; solar hotspots are continuous patches without pepper.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, include raking macros of the hotspot; add context frames showing suspected reflector and the specular path.
- MSRT result: Record SC class (SC-0/1/2) with one light, non-marring pass (polymer stylus on suspected coated faces). Do not pass across any crack.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-th-04-01-localized-thermal-hot-spot-imprint-solar-concentration-reflective-interactions/

DSS-Ch.01.01 | Chemical Attack / Etch / Reaction

Acid-Etch Graffiti (HF / BOE)

Chemical - hydrofluoric/fluorosilicate attack; subsurface micro-texture “frost” with runs/lettering

Diagnosis summary

Acid-etch graffiti is a chemically etched pattern (letters, tags, symbols, swirls) produced by hydrofluoric-bearing agents (e.g., HF gels, Buffered Oxide Etch/BOE). Reaction dissolves silica, leaving subsurface micro-texture (“frost”) and often drip legs or pooling halos. Classification is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-2 (clear) within etched strokes; can read SC-1 at lighter attacks. Perform one light, non-marring pass; do not abrade. Use polymer stylus if a coating is suspected. MSRT supports classification only.
- Visual signature
- Continuous, filled strokes (not just line scratches), with soft boundaries and no chip-flank sparkle; drip legs and pooling halos common.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth bands are indicative; numeric measurement not required.
- CAT-2 (Light): Thin, pale strokes with SC-1 to light SC-2; visible mainly under raking; minimal contrast at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Readable tag with SC-2 across strokes; modeled micro-texture clearly apparent at standard distance; drip legs/halos present. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Dense, frosted fill or repeated over-etching with strong SC-2, high contrast at standard & wide-field views; occasional milkiness beyond stroke edges. Indicative relief: ~120-300 µm+.
- CAT-5 (by location/condition): Between-pane/inaccessible by parallax, active cracks/pane instability, or confirmed functional-coating loss on the surface to be worked → CAT-5 (non-repairable/out of.

Distinguishing criteria

- vs.
- vs. Etch-cream (consumer) patterns (V.02.02): Creams can mimic HF but often yield more uniform matte with cleaner stencil edges; industrial HF/BOE shows runs/drips and variable intensity.
- vs. Paint/marker coatings (V.03.01 / R.02.01): Coatings sit on the surface and remove at reveal; acid-etched areas remain with SC-class > 0.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros that resolve modeled micro-texture within strokes, plus at least one context frame capturing full.
- MSRT result: One light, non-marring pass on a representative stroke to record SC-class (SC-1/SC-2). Polymer stylus if coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-01-01-acid-etch-graffiti-hf-boe/

DSS-Ch.01.02 | Chemical Attack / Etch / Reaction

Muriatic / Brick-Wash Fallout (HCl)

Chemical - hydrochloric acid splash/mist/runoff; etched flow films and drip legs

Diagnosis summary

Muriatic/brick-wash fallout is acid exposure from hydrochloric acid (HCl) solutions used for masonry cleaning or concrete etch. It typically presents as flow films, drip legs, and splash constellations that leave etched micro-texture and tone/shine shift on the exposed face. Classification is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- SC-1 (slight) to SC-2 (clear) within etched run/film areas; SC-0 if only a residual cleaning film remains (reveal should remove film). Perform one light, non-marring pass; polymer stylus if a coating is suspected.
- Visual signature
- Flow-organized morphology: continuous bands/legs/sheets tied to gravity; no chip flanks or continuous abrasive tracks.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth ranges are indicative-measurement is not required.
- CAT-1 (Benign / non-relief): Tone/shine shift only, SC-0 after reveal; visible primarily in raking at close/standard view; suggests residual film, not etch. Indicative relief: 0-10 µm.
- CAT-2 (Light): Subtle etched flow film, SC-1, limited impact at standard view; edges soft. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2) across run/film; modeled micro-texture visible at standard distance with legible flow geometry. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Pronounced frost/matte along drip trains or pooling shelves; distinct at standard & wide-field; may exhibit localized whitening. Indicative relief: 120-300 µm+.

Distinguishing criteria

- vs. Acid-etch graffiti (Ch.01.01): Graffiti presents intentional stroke geometry with drip legs from stroke ends; brick-wash fallout shows gravity-organized sheets/runs without letterForms:
- vs.
- vs. Mechanical scoring (M.01): Scoring shows continuous lineation with chip-flank sparkle; chemical runs are non-directional micro-texture within flow bands.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving flow edges/drip legs and modeled micro-texture; add context frames showing.
- MSRT result: One light, non-marring pass on a representative run/film; record SC-class (SC-1/SC-2 if etched; SC-0 if film only).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-01-02-muriatic-brick-wash-fallout-hcl/

Damage Specification Standards
Printable classification one-sheet

DSS-Ch.01.03 | Chemical Attack / Etch / Reaction

Organic-Acid Residues (avian/biogenic high acidity)

Chemical - localized biogenic acid attack; subsurface micro-texture “frost” with runs/pools

Diagnosis summary

Organic-acid residues (e.g., avian droppings, certain plant/biogenic exudates) can produce localized chemical attack on glass, especially under heat + dwell (sun-exposed façades). Resulting appearance ranges from tone/shine shift to subsurface micro-texture (“frost”) with run/pool edges. Classification is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- SC-0 if only a faint optical/cleaning shadow remains (no relief).
- SC-1 (slight) to SC-2 (clear) within etched footprints after reveal when micro-texture developed.
- Perform one light, non-marring pass; polymer stylus if a coating is suspected. Do not abrade. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief ranges are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Sheen/tone shift only, SC-0 after reveal; visible mainly in raking at close/standard view. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Subtle etched footprint, SC-1; limited impact at standard view; footprint edges soft. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2) with modeled micro-texture legible at standard distance; defined pool/run edges. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Pronounced frosted patch over a larger footprint or repeated incidents; distinct at standard & wide-field views. Indicative relief: 120-300 µm+.

Distinguishing criteria

- vs.
- vs. Acid-etch graffiti (Ch.01.01): Graffiti presents intentional stroke geometry/drip legs; organic residues lack letterforms and show pool-centered footprints.
- vs. Residue films (R-family): Detergent/soot films remove at reveal and read SC-0; persisting SC-1/SC-2 indicates etch.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving footprint interior + edge; add context frames (perch/ledge/tree canopies).
- MSRT result: One light, non-marring pass on a representative area; record SC class (SC-0/1/2). Prefer polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-01-03-organic-acid-residues-avian-biogenic-high-acidity/

DSS-Ch.02.01 | Chemical Attack / Etch / Reaction

Cement / Mortar Slurry Etch (high pH)

Chemical - alkaline attack; flow sheets, splash constellations, chalky crusts

Diagnosis summary

Cement/mortar slurry etch is alkaline (high-pH) attack on the exposed glass surface from wet cement, mortar, grout, or concrete slurry. It presents as flow-organized films, splash/fleck constellations, and, after drying, may leave alkali/silicate reaction haze or chalky crusts; prolonged dwell can produce subsurface micro-texture (etch). Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 when a residual film only remains (no relief) and clears with reveal.
- SC-1 (slight) to SC-2 (clear) where alkaline etch produced micro-texture; single light, non-marring pass only; polymer stylus if a coating is suspected. MSRT supports classification only.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth ranges are indicative-measurement not required.
- CAT-1 (Benign / non-relief): Film only, clears at reveal; SC-0; visible mainly in raking at close/standard. Indicative relief: 0-10 µm.
- CAT-2 (Light): Subtle etched field with SC-1; grainy micro-texture apparent in raking; limited impact at standard view. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): SC-2 across flow bands; grainy frost legible at standard distance; edge build-ups well defined. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted sheets/legs; possible crust islands or aggregate fines impressions; distinct at standard & wide-field. Indicative relief: 120-300 µm+.

Distinguishing criteria

- vs. HCl brick-wash fallout (Ch.01.02): HCl runs show cleaner frost with sharper run edges and often rusted metals nearby; alkaline slurry leaves chalky/grainy residue and milky haze.
- vs. Organic-acid footprints (Ch.01.03): Biogenic patches are localized, organic shapes with pool centers; slurry forms sheeting/splash patterns aligned with work zones.
- vs. Mechanical scoring (M.01): Scoring is linear with chip-flank sparkle; alkaline etch shows non-directional grain with flow geometry.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving grain and run edges; add context frames showing cement/masonry source and runoff path.
- MSRT result: One light, non-marring pass on a representative field/run edge; record SC class (SC-0/1/2). Prefer polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-02-01-cement-mortar-slurry-etch-high-ph/

DSS-Ch.02.02 | Chemical Attack / Etch / Reaction

Concrete Splash / Run-Off Etch Pattern

Chemical - alkaline attack; splash constellations, curtain-run bands, pooling shelves

Diagnosis summary

Concrete splash/run-off etch is alkaline (high-pH) attack on the exposed glass surface resulting from fresh concrete wash-out, saw-cut slurry, or rain-driven run-off carrying cement fines. It presents as splash constellations, vertical curtain-run bands, and pooling shelves that can leave grainy micro-texture (etch) after residues are removed. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 when only residual film was present and clears at reveal.
- SC-1 (slight) to SC-2 (clear) where alkaline etch produced micro-texture. Perform one light, non-marring pass; polymer stylus if a coating is suspected. MSRT supports classification only.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth ranges are indicative-measurement not required.
- CAT-1 (Benign / non-relief): Cleaning film only, clears at reveal; SC-0; visible mainly in raking. Indicative relief: 0-10 µm.
- CAT-2 (Light): Subtle etched splash/run bands, SC-1; limited impact at standard view. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): SC-2 over larger curtain-run fields; grainy frost legible at standard distance; edge ridging/pooling shelves apparent. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted swaths with broad coverage or repeated events; distinct at standard & wide-field; may show opaque ridges at run terminations. Indicative relief: 120-300 µm+.

Distinguishing criteria

- vs. HCl brick-wash fallout (Ch.01.02): HCl runs show cleaner frost with sharper run edges; alkaline concrete leaves grainy/milky interiors and can show powdery edge build-ups.
- vs. Organic-acid footprints (Ch.01.03): Biogenic patches are localized organic ovals with pool centers; concrete shows splash constellations and continuous curtain bands tied to work zones.
- vs. Mechanical scoring (M.01): Scoring is directional lineation with chip-flank sparkle; alkaline etch is non-directional grain arranged by flow.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving grain and edge build-ups; add context frames showing splash source/runoff path (saw-cut.
- MSRT result: One light, non-marring pass on representative splash/band/pooling shelf; record SC-class (SC-0/1/2). Polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-02-02-concrete-splash-run-off-etch-pattern/

DSS-Ch.02.03 | Chemical Attack / Etch / Reaction

Efflorescence-Associated Surface Attack

Chemical - alkaline salts/waterborne alkali; run-bloom halos, crust islands, grainy micro-texture

Diagnosis summary

Efflorescence-associated surface attack is alkaline exposure of glass from waterborne salts and pore solutions migrating out of concrete/masonry. As moisture evaporates, alkali-rich films and salt blooms at the glass interface can etch the exposed face, leaving grainy micro-texture and run/pool halos after residues are removed. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 where salt residue only remains prior to reveal.
- SC-1 (slight) to SC-2 (clear) if etch formed beneath/within the bloom footprint. Perform one light, non-marring pass; polymer stylus if a coating is suspected. MSRT supports classification only.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth ranges are indicative-measurement not required.
- CAT-1 (Benign / non-relief): Bloom/film only, clears at reveal; SC-0; visible mainly in raking. Indicative relief: 0-10 µm.
- CAT-2 (Light): Subtle etched halos/fields with SC-1; grain evident in raking; limited impact at standard view. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): SC-2 across broader run-bloom regions; grainy frost legible at standard distance; persistent halo geometry. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted swaths with repeated cycles; distinct at standard & wide-field; may show opaque edge crust shadows. Indicative relief: 120-300 µm+.

Distinguishing criteria

- vs.
- vs. HCl brick-wash fallout (Ch.01.02): HCl runs have cleaner frost with sharper borders; efflorescence often leaves feathered white bloom and granular ghosting after reveal.
- vs. Organic-acid footprints (Ch.01.03): Biogenic patches are localized ovals with pool centers; efflorescence tracks porous-substrate moisture patterns (joints/headers/weep).

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving bloom edges/grain; add context frames showing weep paths, joints, porous substrates.
- MSRT result: One light, non-marring pass on representative halo/interior; record SC-class (SC-0/1/2). Prefer polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-02-03-efflorescence-associated-surface-attack/

DSS-Ch.03.01 | Chemical Attack / Etch / Reaction

Mineral Deposits (removable)

Chemical/mineral - bonded surface deposits; no subsurface attack when fully removed

Diagnosis summary

Mineral deposits (removable) are bonded surface residues from hard water, irrigation overspray, construction rinse, or marine aerosol that sit on the glass and do not produce subsurface attack when promptly addressed. After a proper Non-Invasive Reveal (neutral pH/distilled water + lint-free microfiber) deposits may partially or fully clear;

Field identification cues

- Surface-catch class (MSRT)
- Before removal, MSRT may feel gritty/proud residue (do not use MSRT across crystalline nodules).
- After Non-Invasive Reveal and careful residue lift, a true deposit-only case will read SC-0 (no relief) on the glass substrate.
- Use one light, non-marring pass only to confirm substrate relief status after residues are lifted at a small test area; polymer stylus if a coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by appearance under VIS geometry after reveal testing of a small, representative area. If, once residues are removed, the substrate reads SC-0, classify within CAT-1.
- CAT-1 (Benign / non-relief): Deposit only; after removal the substrate is SC-0 with no micro-texture; visibility at acceptance distances falls away when clean/dry.
- Reclassify when:
- Shadow persists after full removal but reads SC-0 → consider Ch.03.02 Mineral staining (non-etch).
- Modeled micro-texture remains with SC-1/SC-2 → classify Ch.03.03 Mineral etching (CAT-2/3/4 by cues).

Distinguishing criteria

- vs. Mineral staining (Ch.03.02): Staining leaves a cleaning-resistant tone shift but SC-0; deposits remove fully with no shadow.
- vs. Mineral etching (Ch.03.03): Etch shows modeled micro-texture and SC-1/SC-2 after thorough removal.
- vs. Alkaline/acid etch (Ch.01/.02): Chemical etch presents flow-organized films and SC-class > 0 on the substrate after residue removal.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; capture pre-reveal overall and post-reveal test patch showing substrate condition; include raking macros verifying SC-0.
- MSRT result (substrate only): After lifting a small representative deposit without abrasion, record SC-class (expect SC-0 for deposit-only).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-03-01-mineral-deposits-removable/

DSS-Ch.03.02 | Chemical Attack / Etch / Reaction

Mineral Staining (persistent film/discoloration, non-etch)

Chemical/mineral - tenacious surface film or color shift that persists after reveal; substrate remains SC-0

Diagnosis summary

Mineral staining (non-etch) is a tenacious surface film or color shift caused by hard-water minerals/salts (often with organic/soiling binders) that persists after a proper Non-Invasive Reveal yet does not produce subsurface attack. Under magnification/raking, the glass substrate shows no modeled micro-texture when the stain is fully lifted-MSRT on clean substrate = SC-0.

Field identification cues

- Surface-catch class (MSRT)
- On the clean glass substrate: SC-0 (no relief).
- Across remaining film: avoid stylus use on contaminated patches; lift a small test spot (without abrasion) to expose substrate and confirm SC-0.
- Polymer stylus if a coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact under VIS geometry after a controlled reveal test confirms substrate SC-0.
- CAT-1 (Benign / non-relief): Faint veil/halo visible mainly in raking at close/standard; substrate SC-0 at the test patch.
- CAT-2 (Light): Noticeable film at standard view under certain angles; still SC-0 on substrate where film is fully lifted; edges soft.
- CAT-3 (Moderate): Persistent, broader veil/banding apparent at standard distance across larger area; SC-0 confirmed at localized lift.
- Reclassify when: Any modeled micro-texture or SC-class > 0 persists on the substrate after true film removal → Ch.03.03 Mineral etching (CAT-2/3/4 by cues).

Distinguishing criteria

- vs. Mineral deposits (Ch.03.01): Deposits fully remove with no residual tone shift; staining persists optically but remains SC-0 on substrate when truly clean. vs.
- vs. Alkaline/acid etch (Ch.01/.02): Chemical etch exhibits run-organized micro-texture and SC-class > 0; staining is a film/optical condition.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include pre-reveal overall, and a post-reveal test patch that demonstrates substrate SC-0 (raking macro).
- MSRT result (substrate only): One light, non-marring pass on the clean test patch; record SC-0 if non-etch is confirmed.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-03-02-mineral-staining-persistent-film-discoloration-non-etch/

DSS-Ch.03.03 | Chemical Attack / Etch / Reaction

Mineral Etching (subsurface micro-texture)

Chemical/mineral - dissolution of silica by mineral/alkaline films; modeled micro-texture “frost” within prior deposit/run footprints

Diagnosis summary

Mineral etching is subsurface attack of the glass network produced by persistent mineral films (e.g., hard-water salts with alkaline bias) and wet/dry cycling that chemically dissolves silica at the surface. After a proper Non-Invasive Reveal, etched areas remain as modeled micro-texture (“frost”) that modifies tone/shine and specular clarity. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-1 (slight) to SC-2 (clear) on etched zones after reveal.
- Perform one light, non-marring pass on a representative area; polymer stylus if a coating is suspected. MSRT supports classification only; do not abrade to “force” a response.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief values are indicative-field measurement not required.
- CAT-2 (Light): Subtle modeled micro-texture, SC-1; visible primarily in raking at close/standard view; little impact at 36/72 in when clean/dry. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2); frosted field legible at standard distance; footprint geometry evident (rings/runs/shelves). Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Pronounced matte/frosted regions obvious at standard & wide-field views; may appear whitened in strong raking. Indicative relief: ~120-300 µm+.
- CAT-5 (by condition/location): Between-pane/inaccessible by parallax, integrity indicators (active cracks, pane movement), or confirmed functional-coating loss on the surface to be worked → CAT-5.

Distinguishing criteria

- vs. Mineral deposits (Ch.03.01): Deposits remove fully; etched substrate remains SC-1/SC-2 with modeled micro-texture after true removal.
- vs. Mineral staining (Ch.03.02): Staining shows optical veil with substrate SC-0 once truly clean; etching shows substrate SC-class > 0.
- vs. Alkaline slurry etch (Ch.02.01/.02): Slurry patterns are often sheeting/splash tied to concrete work; mineral etch commonly follows sprinkler arcs/ring halos with softer boundaries.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving micro-texture and boundary; add context frames showing spray lines/sills/mullions or.
- MSRT result: One light, non-marring pass on etched field; record SC-class (SC-1/SC-2). Polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-03-03-mineral-etching/

DSS-Ch.04.01 | Chemical Attack / Etch / Reaction

Paint Remover / Solvent Bloom (matting / sheen loss)

Chemical - solvent exposure; optical matting or non-directional micro-texture within spill/wipe footprints

Diagnosis summary

Paint remover/solvent bloom is an appearance change caused by solvent-based strippers, thinners, or hot solvents contacting glass. Depending on chemistry, dwell, and heat, it presents as optical matting (sheen loss) and-in stronger cases-subtle non-directional micro-texture within a spill/wipe footprint. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for optical-only matting (no relief).
- SC-1 (slight) where very shallow modeled micro-texture formed after strong or hot-solvent exposure. SC-2 is uncommon.
- Perform one light, non-marring pass; polymer stylus if a coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief ranges are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Sheen/tone shift only, SC-0; visible at certain angles, minimal impact at standard view. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Subtle modeled micro-texture, SC-1, confined to spill/wipe footprint; limited impact at standard view. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): SC-1 to SC-2 matting legible at standard distance across broader footprint or multiple overlapping wipes. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Pronounced matte field with obvious milky scatter at standard & wide-field views (rare for solvents alone; consider mixed chemistry). Indicative relief: 120-300 µm+.

Distinguishing criteria

- vs.
- vs. Residue films (R-family): Paint or adhesive overspray/films remove at reveal and read SC-0 on substrate; bloom persists as optical matting ± SC-1.
- vs. Mechanical abrasion (M.02.01 swirls): Abrasive swirls show directional arcs/tracks with edge sparkle and SC-1/SC-2 along paths; bloom lacks linear pathing and chip flanks.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique, with raking macros resolving matting boundaries/overlap lines; add context frames (tools, cans, work zone).
- MSRT result: One light, non-marring pass on footprint interior; record SC-class (SC-0/1/2). Polymer stylus if coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-04-01-paint-remover-solvent-bloom-matting-sheen-loss/

DSS-Ch.04.02 | Chemical Attack / Etch / Reaction

Adhesive Remover Staining Pattern

Chemical - solvent/citrus/amine blends lifting PSA binders; directional wipe veils, halos, overlap lines

Diagnosis summary

Adhesive remover staining is an appearance change produced when label/film/PSA residue is treated with adhesive removers (e.g., citrus terpenes, glycol ethers, amines, mixed solvents). Incomplete lift and smear leave directional wipe veils, halos, and overlap lines; substrate may remain non-etched (often), but prolonged dwell/hot application can yield very shallow micro-texture.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 on the clean substrate once true residues are fully lifted (non-etch case).
- SC-1 (slight) may be observed where hot/strong remover and pressure caused very shallow modeled texture; SC-2 is uncommon.
- Perform one light, non-marring pass on a revealed test patch only (substrate), not across gummy islands. Use polymer stylus if a coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact and MSRT after a controlled reveal on a small patch to distinguish film vs. micro-texture. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical veiling only, SC-0 on clean substrate; visible primarily in raking at certain angles. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Subtle modeled micro-texture along wipe paths, SC-1; limited impact at standard view. Indicative relief: 10-40 µm.
- CAT-3 (Moderate): SC-1 to SC-2 veiling/matting legible at standard distance across a broad wipe network with distinct overlap lines. Indicative relief: 40-120 µm.
- CAT-4 (Severe): Rare for adhesive removers alone; consider mixed chemistry (alkaline/solvent stack) if pronounced matte fields appear across wide areas (then re-evaluate under Ch.04.03 or Ch.02 family).

Distinguishing criteria

- vs.
- vs. Mechanical swirls (M.02.01): Abrasive swirls present arcs/tracks with edge sparkle and SC-1/SC-2 along lanes; adhesive veils are sheety with wipe vectors, not discrete abrasive tracks.
- vs. Mineral staining/etch (Ch.03): Mineral conditions track spray/run geometry and may yield ring/arc halos; adhesive-remover staining centers on label/film locations with wipe vectors.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros showing wipe vectors, overlap lines, and lens halos; add context frames (labels/film remnants,.
- MSRT result: One light, non-marring pass on a clean test patch; record SC-class (expect SC-0 for film-only; SC-1 if shallow micro-texture exists).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-04-02-adhesive-remover-staining-pattern/

DSS-Ch.04.03 | Chemical Attack / Etch / Reaction

Degreaser / Alkaline Cleaner “Burn”

Chemical - high-pH cleaner exposure; grainy/milky micro-texture in wipe/run geometries

Diagnosis summary

Degreaser/alkaline cleaner “burn” is an appearance change or etch caused by high-pH cleaners (e.g., strong degreasers, builders, ammonia/amine blends) contacting glass and dwell/drying on the surface. It presents as milky/grainy micro-texture in wipe vectors, sheeted runs, or pool halos. Classification is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- SC-1 (slight) to SC-2 (clear) on etched lanes/fields after reveal.
- Perform one light, non-marring pass on a representative interior area; polymer stylus if a coating is suspected. Do not “scrub-probe.” MSRT supports classification only.
- Visual signature

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth ranges are indicative-field measurement not required.
- CAT-2 (Light): Subtle grain in narrow wipe lanes; SC-1; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clear detect (SC-2) across broader wipe networks or sheeting fields; legible at standard distance; overlap lines distinct. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Pronounced milky/grainy matte over large areas (e.g., entire panel wiped and dried in sun); obvious at standard & wide-field views. Indicative relief: ~120-300 µm+.
- CAT-5 (by condition/location): Between-pane/inaccessible by parallax, integrity indicators (active cracks, pane movement), or confirmed functional-coating loss on the surface to be worked → CAT-5 (out of.

Distinguishing criteria

- vs.
- vs. Mineral staining/etch (Ch.03): Mineral issues reflect spray arcs/rings/runoff; alkaline cleaner burn aligns with wipe vectors or broad sprayed sheets and building operations.
- vs. Mechanical swirls (M.02.01): Abrasive swirls show arcs/tracks with edge sparkle; alkaline burn reads as non-directional grain without discrete pathing.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving grain and overlap/run edges; add context frames (cleaning supplies, janitorial/kitchen.
- MSRT result: One light, non-marring pass on etched interior; record SC-class (SC-1/SC-2). Polymer stylus if coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-04-03-degreaser-alkaline-cleaner-burn/

DSS-Ch.05.01 | Chemical Attack / Etch / Reaction

Bleach / Peroxide Shadowing

Chemical - oxidizer exposure; optical tone shift ± very shallow micro-texture within spill/wipe footprints

Diagnosis summary

Bleach/peroxide shadowing is an appearance change caused by oxidizing agents (e.g., sodium hypochlorite bleach, hydrogen peroxide cleaners) contacting glass and drying/dwelling on the surface, sometimes in sunlight/heat. It presents as optical tone/contrast shift and, in stronger cases, very shallow, non-directional micro-texture within a spill/wipe footprint.

Field identification cues

- Surface-catch class (MSRT)
- Commonly SC-0 (optical only).
- SC-1 (slight) can occur after concentrated or heated oxidizer dwell; SC-2 is rare.
- Perform one light, non-marring pass on a representative interior area; polymer stylus if a coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical tone/contrast shift only, SC-0; visible mainly at certain angles or in raking; minimal impact at standard view. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Very shallow modeled micro-texture, SC-1, confined to spill/wipe footprint; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broader matte/whitened footprint legible at standard distance; SC-1 to SC-2. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Uncommon for oxidizers alone; if pronounced matte fields or wide-area whitening are present, consider mixed chemistry (alkaline/oxidizer stack) and re-evaluate under applicable DSS.

Distinguishing criteria

- vs. Degreaser/alkaline burn (Ch.04.03): Alkaline burn shows grainier micro-texture with sheet/run geometries; oxidizer shadowing tends to be softer, optical with SC-0 to SC-1.
- vs. Adhesive remover staining (Ch.04.02): Adhesive remover exhibits wipe directionality + overlap lines centered on label sites; oxidizer footprints may be broader sprays or mop wipes.
- vs. Mineral staining/etch (Ch.03): Mineral conditions follow spray arcs/rings/runs and often yield ring halos; oxidizer shadowing lacks mineral ring morphology.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of footprint interior and edges; add context frames (cleaners, carts, work area).
- MSRT result: One light, non-marring pass on footprint interior; record SC-class (SC-0/SC-1/SC-2). Polymer stylus if coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-05-01-bleach-peroxide-shadowing/

DSS-Ch.05.02 | Chemical Attack / Etch / Reaction

Reducing Agent Discoloration

Chemical - reducers/neutralizers; optical tone shift ± very shallow micro-texture within wipe/run footprints

Diagnosis summary

Reducing agent discoloration is an appearance change caused by reducing chemicals (e.g., bisulfites/metabisulfites, thiols, ammonia-based reducers/neutralizers, specialty graffiti/bleach neutralizers) contacting glass and dwelling/drying on the surface. Outcomes range from optical tone/contrast shift to very shallow, non-directional micro-texture within wipe or run geometries.

Field identification cues

- Surface-catch class (MSRT)
- Often SC-0 (optical only).
- SC-1 (slight) can occur where reducers dwelled in heat/sun or were used concentrated; SC-2 is rare.
- Perform one light, non-marring pass on a representative interior area; polymer stylus if a coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth/relief values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical tone/contrast shift only, SC-0; visible mainly at certain angles/raking; minimal at standard view. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Very shallow modeled micro-texture, SC-1, confined to wipe/run footprint; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broader matte/veil legible at standard distance, SC-1 to SC-2; repeat passes/overlaps evident. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Uncommon for reducers alone; if pronounced matte fields occur, consider mixed chemistry (alkaline + reducer stack) and re-evaluate under applicable DSS. Indicative relief: ~120-300 µm+.

Distinguishing criteria

- vs. Bleach/peroxide shadowing (Ch.05.01): Oxidizer shadows are often whiter; reducer discoloration trends neutral/yellow-grey; both may be optical (SC-0) or SC-1 with dwell/heat.
- vs. Degreaser/alkaline burn (Ch.04.03): Alkaline burn shows grainier micro-texture and sheet/run geometries; reducer discoloration frequently softer and less granular.
- vs. Adhesive remover staining (Ch.04.02): Adhesive removers are tied to label/film sites with distinct overlap lines; reducer stains map to neutralization zones after chemical cleaning.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of footprint interiors and overlap/run edges; add context frames (neutralizers/containers, work.
- MSRT result: One light, non-marring pass on footprint interior; record SC-class (SC-0/SC-1/SC-2). Polymer stylus if coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-05-02-reducing-agent-discoloration/

DSS-Ch.06.01 | Chemical Attack / Etch / Reaction

Silane / Siloxane Migration Halo

Chemical/interaction - penetrating water-repellent from adjacent porous substrates; optical halos/veils, transfer films ± shallow micro-texture

Diagnosis summary

Silane/siloxane migration halo is an appearance change on glass resulting from penetrating water-repellent treatments (silane/siloxane) applied to adjacent porous materials (masonry/concrete/stone). During application, overspray, vapor phase, or capillary contact/weep can deposit organosilicon films on the glass, producing optical halos/veils and, with UV/heat/soiling, tenacious films that may leave very shallow micr...

Field identification cues

- Surface-catch class (MSRT)
- Frequently SC-0 (optical film only) on freshly contaminated glass.
- SC-1 (slight) may occur on aged/UV-baked halos where organosilicon residues cross-link with contaminants, leaving very shallow texture. SC-2 uncommon.
- Perform one light, non-marring pass on a revealed test patch only; polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact and MSRT after controlled reveal on a small representative area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical halo/veil only, SC-0 on clean substrate; visible primarily at certain angles/raking; limited at standard view. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent thin film with SC-1 at a revealed test patch (aged case); limited impact at standard view; edges track substrate geometry. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broader banding/halo legible at standard distance with SC-1 to SC-2 in aged regions; often co-located with soil accumulation. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Rare for silane/siloxane alone; if pronounced matte fields or widespread cross-linked texture occur, consider mixed chemistry (alkali + organosilicon + UV/soiling) and re-evaluate under.

Distinguishing criteria

- vs.
- vs. Residue films (R-family): General detergents/soot films lack strong geometric correlation to treated masonry lines and often clear more uniformly at reveal.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of the halo edge and interior veil; add context frames showing treated masonry/stone, masking.
- MSRT result: One light, non-marring pass on a clean test patch within the halo; record SC-class (SC-0/SC-1/SC-2). Polymer stylus if a coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-06-01-silane-siloxane-migration-halo/

DSS-Ch.06.02 | Chemical Attack / Etch / Reaction

Hydrophobic Coating Mismatch Halo

Chemical/interaction - on-glass hydrophobic coating applied/removed unevenly; water-behavior edge, optical halo/veil ± shallow micro-texture

Diagnosis summary

Hydrophobic coating mismatch halo is an appearance change caused by uneven application, partial removal, or edge-lap of an on-glass hydrophobic coating (e.g., rain-repellent, DIY nano-sealant). The result is a water-behavior discontinuity and an optical halo/veil at the boundary between coated and uncoated (or differently coated) zones; long UV/soil exposure may leave very shallow micro-texture at the boundary.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film/wetting difference only).
- SC-1 (slight) can appear on aged/UV-baked boundaries where organics cross-link with dust/soot; SC-2 uncommon.
- Perform one light, non-marring pass on a revealed test patch; use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact and MSRT after reveal. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Water-behavior edge/optical halo only; SC-0; visible mainly at angle or with wetting test. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent halo/veil with slight SC-1 at aged boundary; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broader boundary zones legible at standard distance (dirty tide line, non-uniform sheen) with SC-1→SC-2. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Rare for hydrophobics alone; if extensive matte fields occur, consider mixed chemistry (alkaline + coating residue + UV/soiling) and re-evaluate under applicable DSS.

Distinguishing criteria

- vs.
- vs. Mineral staining/etch (Ch.03): Mineral issues show rings/runs and modeled micro-texture; mismatch halos are sharp wetting edges with usually SC-0 substrate.
- vs. Residue films (R-family): General films lack sharp water-behavior lines and often clear uniformly at reveal.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of the boundary line and adjacent veil. Record distance/angle in-frame.
- Wetting behavior documentation (supplemental). Light mist test across the boundary; photograph immediate beading/sheeting contrast. Avoid flooding edges/IGU seals.
- MSRT result: One light, non-marring pass on a clean test patch at/near the boundary; record SC-class (SC-0/SC-1/SC-2).

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-06-02-hydrophobic-coating-mismatch-halo/

DSS-Ch.06.03 | Chemical Attack / Etch / Reaction

Anti-Graffiti Coating Ghost (chemically altered)

Chemical/interaction - altered or partially removed sacrificial/permanent barrier; optical veil/patchiness ± shallow micro-texture, boundary lap lines

Diagnosis summary

Anti-graffiti coating ghost is an appearance change on glass resulting from application, partial removal, or chemical alteration of anti-graffiti barrier products (sacrificial wax/polymer films or “permanent” polysiloxane/fluoropolymer systems).

Field identification cues

- Surface-catch class (MSRT)
- Commonly SC-0 (film/wetting difference only).
- SC-1 (slight) may appear on aged / cross-linked or chemically attacked zones; SC-2 uncommon.
- Perform one light, non-marring pass on a revealed test patch (substrate) only; polymer stylus if a factory functional coating may be present. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact and MSRT after reveal. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical veil/patchiness or wetting contrast only; SC-0; visible mainly in angle/raking. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent halo/patch with SC-1 on aged/altered zones; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broader patch map / edge-lap network legible at standard distance; SC-1 → SC-2 in most affected areas. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Rare for anti-graffiti alone; where pronounced matte fields or widespread micro-texture exist, consider mixed chemistry (alkali/oxidizer stacks) and re-evaluate under applicable DSS.

Distinguishing criteria

- vs.
- vs. Silane/siloxane migration (Ch.06.01): Migration halos align to masonry treatment geometry/weep paths; anti-graffiti ghosts align to glass-only application/removal and graffiti events.
- vs. Residue films (R-family): General films lack distinct application geometry and wetting discontinuities.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of edge-lap lines, patch interiors, and any holiday regions; add context frames (tag remnants,.
- Wetting behavior documentation (supplemental). Light mist test straddling a boundary; photograph immediate beading/sheeting contrast. Avoid flooding edges/IGU seals.
- MSRT result: One light, non-marring pass on a clean test patch; record SC-class (SC-0/SC-1/SC-2). Polymer stylus if a factory functional coating may be present.

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-ch-06-03-anti-graffiti-coating-ghost-chemically-altered/

DSS-R.01.01 | Residue / Film / Adhesion

Silicone Smear / Tool-Mark Film

Residue/film - uncured or partially cured silicone transfer from sealant tooling; optical veil, print, or drag; typically SC-0

Diagnosis summary

Silicone smear / tool-mark film is an appearance change on glass from uncured/partially cured silicone (or siloxane-rich by-products) deposited during sealant application and tooling at adjacent joints. It presents as optical veils, drag/corduroy tool lines, or finger/pad prints, often with preferential soil capture over time. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film only).
- SC-1 (slight) may occur in aged, soil-loaded smears where residue cross-links with contaminants; SC-2 uncommon.
- Perform one light, non-marring pass on a revealed test patch (substrate) only; polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact and MSRT after a controlled reveal on a small, representative area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical veil/print only; SC-0 on clean substrate; visible mainly at angle/raking. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent thin film with slight SC-1 on aged/soil-loaded zones; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broader tool-mark bands/dirty halos legible at standard distance with SC-1→SC-2 in worst patches. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Rare for silicone residue alone; if pronounced matte fields exist, consider mixed chemistry (alkali + siloxane + UV/soiling) and re-evaluate under applicable DSS.

Distinguishing criteria

- vs. Butyl/PIB/IG sealant smear (R.01.02): PIB/butyl smears are tackier, darker, and can string; silicone reads oily/iridescent with lighter, clear veils.
- vs. Silane/siloxane migration halo (Ch.06.01): Migration halos align with masonry treatment geometry/weep paths; silicone tool-marks track the joint on the glass face and show corduroy drag.
- vs. Hydrophobic coating mismatch (Ch.06.02): Mismatch shows sharp wetting-behavior edges across open fields; silicone smears sit adjacent to joints with tooling direction visible.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving drag/corduroy and finger/tool prints; add context frames (fresh joints, masking, tools).
- MSRT result: One light, non-marring pass on a clean test patch within the smear; record SC-class (SC-0/SC-1/SC-2). Polymer stylus if a functional coating is suspected.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-01-01-silicone-smear-tool-mark-film/

DSS-R.01.02 | Residue / Film / Adhesion

Butyl / PIB / IG Sealant Smear

Residue/film - butyl/PIB/IG edge-seal transfer; dark tacky smear, stringing, edge-adjacent bands; typically SC-0

Diagnosis summary

Butyl/PIB/IG sealant smear is an appearance change on glass from polyisobutylene (PIB) primary seal or butyl-based edge sealants transferred during IGU handling, glazing, or service. It presents as dark, tacky smears/bands, often edge-parallel, with possible stringing and particulate catch. Classification is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film only) on the clean substrate once residue is truly lifted.
- Avoid MSRT across active tacky smear; if a small test patch is safely cleaned without abrasion, confirm substrate SC-0 there.
- Use polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact at acceptance geometry after a controlled reveal test confirms substrate SC-0 on a small patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical/tarry smear only; once properly lifted, substrate SC-0; visibility mainly at angle/raking. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent thin tar veil that resists simple reveal; localized soil catch increases visibility at standard view; substrate SC-0 at a clean test patch. Indicative relief: ~10-40 µm (film).
- CAT-3 (Moderate): Broad edge bands/prints legible at standard distance due to thicker smear + soil loading; SC-0 on substrate where truly cleaned. Indicative relief: ~40-120 µm (film stack).
- Reclassify when: Any modeled micro-texture or SC-class > 0 remains on substrate after true residue removal → evaluate under chemical etch families (Ch.04/.05) or mechanical if present.

Distinguishing criteria

- vs. Silicone smear (R.01.01): PIB/butyl is darker, tar-like, tacky, often strings; silicone is oily/iridescent, lighter, with corduroy tool lines.
- vs. Silane/siloxane migration (Ch.06.01): Migration halos align with masonry treatment geometry; PIB/butyl smears align with IGU edges/spacers and handling points.
- vs. Mineral staining (Ch.03.02): Mineral veils are lighter and non-tacky; PIB/butyl is dark/tacky, captures particulates.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving drag edges, stringers, and particulate catch; add context frames (IGU spacer line,.
- MSRT result (substrate only): After lifting a small test patch without abrasion, perform one light, non-marring pass on the clean substrate; record SC-class (expect SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-01-02-butyl-pib-ig-sealant-smear/

DSS-R.01.03 | Residue / Film / Adhesion

Polysulfide / Polyurethane Smear

Residue/film - glazing/sealant transfer; amber/grey smear, elastic “drag tails,” soil-laden bands; typically SC-0

Diagnosis summary

Polysulfide/polyurethane smear is an appearance change on glass from two-part polysulfide or moisture-cure polyurethane (PU) glazing/sealants transferred during application, tooling, masking removal, handling, or squeeze-out. It presents as amber-to-grey translucent veils, elastic drag tails/strings, and soil-laden bands adjacent to joints and corners. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film only) on clean substrate once residue is truly lifted.
- Avoid MSRT across active/elastic smear; if a small test patch is safely cleaned without abrasion, confirm substrate SC-0 there.
- Use a polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact at acceptance geometry after a controlled reveal test confirms substrate SC-0 on a small patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin optical veil/print; SC-0 on clean substrate; visibility mostly at angle/raking. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent thin smear with soil loading legible at standard view; substrate SC-0 at a clean test patch. Indicative relief: ~10-40 µm (film).
- CAT-3 (Moderate): Broader bands/corner blooms with stringers/dirty halos visible at standard distance; SC-0 on substrate where truly cleaned. Indicative relief: ~40-120 µm (film stack).
- Reclassify when: After true residue removal, any modeled micro-texture or SC-class > 0 remains on substrate → evaluate under chemical etch (Ch.04/.05) or mechanical families as indicated.

Distinguishing criteria

- vs. Silicone smear (R.01.01): Silicone reads oily/iridescent, lighter, with fine corduroy; polysulfide/PU reads amber/grey, more tarry, with elastic tails and strong soil catch.
- vs. Butyl/PIB smear (R.01.02): PIB is darker, very tacky, edge-line tracking at spacers; polysulfide/PU often adjacent to weatherseal joints and masking lines, not spacer lines.
- vs. Hydrophobic mismatch (Ch.06.02): Mismatch shows sharp wetting-behavior edges across open fields; polysulfide/PU smears hug joints and lack crisp wetting boundaries.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving drag texture, elastic tails, and soil catch; add context frames (masking lines, tools,.
- MSRT result (substrate only): After lifting a small test patch without abrasion, perform one light, non-marring pass on the clean substrate; record SC-class (expect SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-01-03-polysulfide-polyurethane-smear/

DSS-R.01.04 | Residue / Film / Adhesion

Mastic / Bitumen / Tar Transfer

Residue/film - roofing/asphalt/bituminous adhesives; dark brown-black tacky smear, drag strings, soil-loaded bands; typically SC-0

Diagnosis summary

Mastic/bitumen/tar transfer is an appearance change on glass from bituminous products (roofing asphalt, waterproofing mastics, tar-based adhesives/primers) contacting the surface during construction, roofing, façade waterproofing, or logistics. It presents as dark brown-black, tacky smears/bands, often edge- or frame-adjacent, with drag strings and heavy particulate/soot capture.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 on the clean glass substrate once residue is truly lifted (non-etch).
- Do not run MSRT across active tack; if a small test patch is safely cleaned without abrasion, confirm substrate SC-0 there.
- Use polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact under VIS geometry after a controlled reveal test confirms substrate SC-0 on a small patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin optical smear; SC-0 on clean substrate; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent tar veil with soil/soot loading legible at standard view; SC-0 on substrate at test patch. Indicative relief: ~10-40 µm (film).
- CAT-3 (Moderate): Broad/opaque bands, ropey strings, heat-flow legs visible at standard distance; SC-0 on substrate where truly cleaned. Indicative relief: ~40-120 µm (film stack).
- Reclassify when: After true residue removal, any modeled micro-texture or SC-class > 0 persists on substrate → evaluate under chemical etch (Ch.04/.05) or mechanical families as indicated.

Distinguishing criteria

- vs. Butyl/PIB smear (R.01.02): PIB is usually edge-line/parallels spacers, tacky but less opaque; bitumen/tar is darker, more odoriferous, and often heat-flowed.
- vs. Polysulfide/PU smear (R.01.03): Polysulfide/PU tends amber/grey, shows elastic tails; tar is brown-black, more ropey with soot catch and heat sag.
- vs. Silicone smear (R.01.01): Silicone reads oily/iridescent, lighter, with corduroy tool lines; tar is opaque/dark with grit capture.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros resolving ropey edges, stringers, grit embed, and any heat-flow legs; add context frames.
- MSRT result (substrate only): After lifting a small test patch without abrasion, perform one light, non-marring pass on the clean substrate; record SC-class (expect SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-01-04-mastic-bitumen-tar-transfer/

DSS-R.01.05 | Residue / Film / Adhesion

Adhesive Label / Sticker Ghost

Residue/film - pressure-sensitive adhesive (PSA) imprint after label removal; lens-shaped halo, wipe-edge overlaps; typically SC-0 on clean substrate

Diagnosis summary

Adhesive label/sticker ghost is an appearance change on glass caused by pressure-sensitive adhesive (PSA) remnants or plasticizer transfer that remain after label/tape/film removal. It presents as a lens-shaped halo or rectilinear patch at the former label footprint, often with wipe-edge overlaps from attempted cleanups. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Expect SC-0 on the clean glass substrate once true PSA residue is lifted (non-etch).
- If a strong remover or heat was used excessively, a very slight SC-1 may be observed (converted film or shallow texture) within the footprint.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over gummy islands. Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact at acceptance geometry and MSRT on a small revealed test patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical ghost only; substrate SC-0 after true lift; visible mainly at angle/raking. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent thin film within footprint with slight SC-1 (aged/converted PSA or over-treated with hot/strong remover); limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad, high-contrast footprint with dirty tide line and SC-1→SC-2 at interior (uncommon; suggests chemical interaction beyond simple PSA). Indicative relief: ~40-120 µm.
- Reclassify when: After true residue removal, any modeled micro-texture or SC-class > 0 remains on substrate → evaluate under Ch.04.02 Adhesive remover staining or Ch.04.03 Degreaser/alkaline burn as.

Distinguishing criteria

- vs. Protective film adhesive residue (R.01.06): Film residues often cover larger areas with edge-peel scallops; label ghosts are small, discrete, and match common label dies.
- vs.
- vs. Mineral staining (Ch.03.02): Mineral veils align to spray/runs and are non-tacky; label ghosts track label shape and installation height/pattern.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of the footprint interior and edge/overlap lines; add context frames (label fragments, remover.
- MSRT result (substrate only): After lifting a small test patch without abrasion, perform one light, non-marring pass on the clean substrate; record SC-class (expect SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-01-05-adhesive-label-sticker-ghost/

DSS-R.01.06 | Residue / Film / Adhesion

Protective Film Adhesive Residue (aged)

Residue/film - construction protection films; edge-peel scallops, panel-wide haze, adhesive islands; typically SC-0 on clean substrate, SC-1 possible in aged conversions

Diagnosis summary

Protective film adhesive residue (aged) is an appearance change on glass from construction/transport protection films whose pressure-sensitive adhesive (PSA) or plasticizers remain after removal-especially when films were over-aged, UV/heat exposed, or removed in cold. It presents as broad veils, edge-peel scallops, adhesive islands/strings, and tide-line halos matching the former film footprint.

Field identification cues

- Surface-catch class (MSRT)
- Expect SC-0 on the clean glass substrate once true adhesive is lifted (non-etch).
- SC-1 (slight) may appear where PSA cross-linked (UV/heat) or was over-worked with aggressive removers, leaving very shallow micro-texture. SC-2 is uncommon.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over gummy remnants. Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility impact at acceptance geometry and MSRT on a revealed test patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Optical veil or island ghosting only; substrate SC-0 after true lift; visible mainly at angle/raking. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent thin PSA film within footprint with SC-1 (aged/cross-linked); limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad panel-wide haze with dirty tide-lines, scallop edges legible at standard distance; SC-1 → SC-2 in worst islands. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue removal, any modeled micro-texture or SC-class > 0 persists on the substrate → evaluate under Ch.04.02 Adhesive remover staining (solvent bloom) or Ch.04.03.

Distinguishing criteria

- vs. Adhesive label/sticker ghost (R.01.05): Labels are small, discrete shapes; protective film residues are large/panel-scale with edge scallops and pull arcs.
- vs. Silicone smear (R.01.01): Silicone tracks joints with tool-mark corduroy; film residue covers open fields with scalloped boundaries.
- vs. Butyl/PIB smear (R.01.02): PIB is dark/tacky and edge-line at spacers; film residue is clear/amber veil often panel-wide.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; include raking macros of edge scallops, islands/strings, tide-lines; add context frames (film scraps, release liners).
- MSRT result (substrate only): After lifting a small test patch without abrasion, perform one light, non-marring pass on the clean substrate; record SC-class (expect SC-0.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-01-06-protective-film-adhesive-residue-aged/

DSS-R.02.01 | Residue / Film / Adhesion

Paint Overspray Film

Residue/film - aerosolized paint/primer droplets; speckled film to misted veil; typically SC-0, SC-1 if binder cross-linking + soil

Diagnosis summary

Paint overspray film is an appearance change on glass from aerosolized paint/primer (airless/spray-can/HVLP) depositing as micro-droplets that coalesce into a speckled film or misted veil. It ranges from discrete dots to a uniform haze and may exhibit tide lines where masking failed or wind drifted plume edges. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (dot/binder film sits on top; non-etch).
- SC-1 can appear in aged/cross-linked overspray with soil embed or where binders partially fused in heat/sun. SC-2 is rare.
- Perform one light, non-marring pass on a small revealed test patch; use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Light dot field/veil; SC-0; mainly angle/raking visible; minimal at standard view. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent denser veil with SC-1 at test patch (aged/cross-linked binder + soil); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): High-density overspray/mist legible at standard distance; SC-1 → SC-2 in worst patches (rare). Indicative relief: ~40-120 µm (film stack).
- Reclassify when: If underlying micro-texture or etch remains after true film removal → evaluate under Ch.04 (chemical) families as indicated.

Distinguishing criteria

- vs. Drywall/plaster film (R.02.02): Drywall leaves chalky particulate with powder transfer; paint overspray shows coalesced droplets and binder gloss.
- vs. Stucco/lime residue (R.02.03): Stucco/lime veils alkaline, often with grain, rings/runs and may progress to etch; overspray is organic binder with speck pattern.
- vs. Mineral staining (Ch.03.02): Mineral films follow water arcs/runs; overspray reflects spray plume geometry and masking lines.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of droplet field and plume edges; context frames of paint operations or masking.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-02-01-paint-overspray-film/

DSS-R.02.02 | Residue / Film / Adhesion

Drywall Mud / Plaster Film

Residue/film - gypsum/setting compound particulate; chalky veil, drag wipes, particulate halos; typically SC-0, SC-1 if abrasion occurred during attempts to clean

Diagnosis summary

Drywall mud/plaster film is an appearance change on glass caused by gypsum-based joint compound or plaster particulates/binders deposited during taping, sanding, feathering, or cleanup. It presents as a chalky veil with drag wipes, finger/pad prints, and particulate halos, sometimes consolidated by moisture. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (loose/powder film on top of glass).
- SC-1 may appear when abrasive pads or dry wipe grinding created very shallow micro-texture during improper cleaning; SC-2 uncommon.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Chalky veil/particulate only; SC-0 after true reveal; primarily angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent residue with tide-line halos or slight SC-1 from prior abrasive wiping; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad, high-contrast matte fields legible at standard distance where residue consolidated with moisture or was abraded into micro-texture (SC-1→SC-2 localized).
- Reclassify when: If underlying alkaline etch is evident (e.g., from cementitious wash, not gypsum) or linear scoring is present from abrasive pads → evaluate under Ch.02 (alkaline attack) or M.02.

Distinguishing criteria

- vs. Paint overspray (R.02.01): Overspray shows coalesced micro-droplets and sometimes color tone; drywall/plaster is white, powdery, non-gloss, transfers to cloth.
- vs.
- vs. Mineral staining/etch (Ch.03): Mineral veils follow water arcs/runs and can show ring halos; gypsum fallout maps to sanding plumes and wipe zones.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of powder texture, wipe overlaps, tide lines; context frames with active drywall/plaster areas.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-02-02-drywall-mud-plaster-film/

DSS-R.02.03 | Residue / Film / Adhesion

Stucco / Lime Film (residue)

Residue/film - cementitious/stucco/lime splash or wash-down; chalk-grain veil, runs/rings, alkaline footprint; typically SC-0, SC-1 if consolidated or lightly abraded

Diagnosis summary

Stucco/lime film (residue) is an appearance change on glass from cementitious or lime-rich materials (stucco brown/finish coats, scratch coats, slurry, limewashes) deposited during application, float/rod work, cutting/grinding, or cleanup/rinse-downs. It presents as a chalk-grain veil with runs/rings and tide-line halos that follow gravity paths and splash footprints.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (loose/consolidated film on top of glass).
- SC-1 may occur where paste consolidated (sun/heat) or where improper abrasive wiping introduced very shallow micro-texture. SC-2 suggests misclassification-re-evaluate for alkaline etch (Ch.02) or mechanical abrasion (M-family).
- Perform one light, non-marring pass on a small revealed test patch; use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal on a small area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Light chalk-grain veil/runs; SC-0 after reveal; mainly angle/raking visible; minimal at standard view. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent consolidated residue or tide-line rings with SC-1 (sun-baked paste, slight shallow texture from mishandling); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad run fields/rings legible at standard distance; SC-1 in worst zones; context suggests extended dwell/heat or heavy splash. Indicative relief: ~40-120 µm.
- Reclassify when: If, after true residue removal, substrate exhibits modeled micro-texture, matte patches, or SC-2 → evaluate under Ch.02.01/Ch.02.02 (Alkaline Attack: cement/mortar slurry/cement run-off.

Distinguishing criteria

- vs.
- vs. Paint overspray (R.02.01): Overspray presents micro-droplet dots and binder gloss; stucco/lime shows grain and non-gloss matte with run legs.
- vs. Alkaline attack (Ch.02): True etch exhibits modeled micro-texture persisting after residue lift and may show SC-2; R.02.03 is residue (film) with SC-0/SC-1, removable in principle.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of grain, run legs, rings/tide lines; context frames of stucco/lime operations, scaffolds, hose-down zones.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-02-03-stucco-lime-film-residue/

DSS-R.03.01 | Residue / Film / Adhesion

Suction Cup Rings (residue / pressure mark)

Residue/film / pressure artifact - lifting cup contact; circular/oval rings, center pucks, tri-lobe clusters; typically SC-0, SC-1 if aged film or slight micro-texture

Diagnosis summary

Suction cup rings are appearance changes on glass caused by vacuum lifter cups or manual suction tools during fabrication, transport, or install. They present as circular/oval rings, center pucks, or tri-/quad-lobe clusters reflecting multi-pad frames. Artifacts include transfer films (plasticizer, rubber, dust-print), pressure marks, or moisture halos; heavy dwell/heat can leave persistent veils.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film/pressure-only).
- SC-1 may appear where aged plasticizer or heat dwell induced slight micro-texture or converted film; SC-2 is uncommon-recheck classification if present.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over gummy islands. Polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal on a small area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin ring/veil; SC-0 after reveal; primarily angle/raking visible. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent circular veil with wetting contrast or slight SC-1 (aged plasticizer/heat dwell); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Multiple rings/arrays legible at standard distance (visual clutter), with patchy SC-1 in ring lips; suggests extensive handling exposure. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists on substrate → consider Ch.06.02 hydrophobic coating mismatch halo or Ch.04.03 alkaline/degreaser burn if strong.

Distinguishing criteria

- vs. Adhesive label/sticker ghost (R.01.05): Labels are smaller with die-cut corners; cup rings are larger round/oval with lip + puck geometry or multi-pad arrays.
- vs. Hydrophobic mismatch halo (Ch.06.02): Mismatch edges are irregular and field-wide; cup rings are precise circles matching pad size.
- vs. Silicone smear (R.01.01): Silicone tracks joints and shows corduroy; cup rings are isolated circles with wetting contrast.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of ring lip, puck, wipe overlaps; context frames showing vacuum equipment or handling setup.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-03-01-suction-cup-rings-residue-pressure-mark/

DSS-R.03.02 | Residue / Film / Adhesion

Separator Pad Ghost / “Waffle” Print

Residue/pressure artifact - packaging separators/pads; grid/waffle imprint, pad-outline veils, adhesive specks; typically SC-0, SC-1 if aged conversion or light micro-texture

Diagnosis summary

Separator pad ghost / “waffle” print is an appearance change on glass caused by packaging/separator pads (foam, corrugated, felt, polymer “waffle” grids) used in racks/crates between lites. It presents as grid or checker imprints, pad-outline veils, or speck/adhesive islands coincident with pad contact zones. Artifacts may include plasticizer/adhesive transfer and pressure marks from long dwell, heat, or vibration.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film/pressure-only).
- SC-1 can appear where plasticizer/adhesive cross-linked (UV/heat dwell) or minor micro-texture formed from trapped fines; SC-2 uncommon-re-evaluate if present.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over gummy nodes. Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal on a small area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Faint grid/pad outline; SC-0 after reveal; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent pad veil with node islands and occasional SC-1 (aged transfer); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area grid legible at standard distance, creating visual clutter; localized SC-1→SC-2 at heavy nodes (rare). Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists broadly → evaluate under Ch.06.02 hydrophobic mismatch halo (if wetting contrast dominates) or Ch.04.02/.03 (if.

Distinguishing criteria

- vs. Suction cup rings (R.03.01): Cup artifacts are large circles/ovals with lip+puck; separator ghosts are small-pitch grids or pad outlines repeating at rack spacing.
- vs. Adhesive label/sticker ghost (R.01.05): Labels are isolated, discrete shapes; separator ghosts are repeating and arrayed.
- vs. Mineral deposition rings (Ch.03.02): Mineral rings are concentric/puddle-based; separator patterns are uniform grids or pad rectangles.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of grid nodes, pad edges, boundary lines; context frames of racks/crates/pads.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-03-02-separator-pad-ghost-waffle-print/

DSS-R.03.03 | Residue / Film / Adhesion

Roller / Handling Rail Transfer

Residue/film / pressure artifact - contact with conveyor rollers, handling rails, rack rails; linear bands, repeating pitch marks, soil-laden streaks; typically SC-0, SC-1 if aged film or light micro-texture

Diagnosis summary

Roller/handling rail transfer is an appearance change on glass from contact with conveyor rollers, storage/handling rails, truck/rack rails, or in-plant guides during fabrication, transport, or staging. It presents as linear bands (often horizontal), repeating pitch marks matching roller spacing, or soiled streaks at consistent heights.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film/pressure-only).
- SC-1 can appear where aged plasticizer/oxidized rubbers or abrasive dust produced very shallow micro-texture during movement; SC-2 uncommon-recheck classification if present.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over gummy accumulations. Use polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Faint linear band(s); SC-0 after reveal; mostly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent rail bands with soil loading or slight SC-1 (aged plasticizer/oxidation); limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide/contrasty bands or repeating roller pitch legible at standard distance; localized SC-1→SC-2 where abrasion with dust occurred. Indicative relief: ~40-120 µm.
- Reclassify when: If, after true residue removal, modeled micro-texture or linear scoring remains → evaluate under M.01 (linear scoring) or M.02 (abrasion fields) as applicable.

Distinguishing criteria

- vs. Conveyor/belt line scoring (M.01.04): True scoring shows chip-flank sparkle and SC-2; rail transfer is film/soil with SC-0/SC-1 and lacks sharp line incision.
- vs. Straightedge/metal guide scoring (M.01.02): Guide scoring is single/few sharp lines; rail transfer is broad banding often repeating across multiple panes.
- vs. Paint overspray (R.02.01): Overspray is speckled/mist without strict level bands or roller pitch.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of band edges, pitch marks, particulate embed; context frames capturing repeating elevation across bays and.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-03-03-roller-handling-rail-transfer/

DSS-R.04.01 | Residue / Film / Adhesion

Detergent / Surfactant Film

Residue/film - cleaning solution residue; streaks, shear marks, rainbowing/iridescence in raking; typically SC-0, SC-1 if micro-texture from abrasive wiping

Diagnosis summary

Detergent/surfactant film is an appearance change on glass from leftover cleaning agents (surfactants, wetting agents, soaps) due to incomplete rinse, over-concentration, hard-water mixing, or re-deposition from tools. It presents as shear streaks, drag/wipe overlaps, rainbow/iridescent sheens in low-angle light, and re-wet spotting. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (thin organic film on surface).
- SC-1 may occur where abrasive cloths/pads introduced very shallow micro-texture while detergent residue acted as a binder; SC-2 is uncommon and suggests misclassification.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin detergent veil with shear streaks/iridescence; SC-0; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent film with overlap edges and SC-1 in small zones (from abrasive wiping); limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area streaking/veils legible at standard distance due to heavy deposition or soil capture; localized SC-1. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue removal, any modeled micro-texture or SC>0 persists → evaluate under M.02 (abrasion fields) or Ch.03 (mineral) if water deposits are involved.

Distinguishing criteria

- vs.
- vs. Mineral staining (Ch.03.02): Minerals leave ring/runs and crystalline edges; detergent films present tool-path streaks and uniform iridescence without ring crystals.
- vs. Hydrophobic mismatch (Ch.06.02): Mismatch exhibits sharp wetting boundaries; detergent film shows gradual streaks that re-wet uniformly (but highlight streak lines).

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of shear streaks and iridescence; optional light mist frame to show re-wet behavior (avoid flooding edges).
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-04-01-detergent-surfactant-film/

DSS-R.04.02 | Residue / Film / Adhesion

Fabric Softener / Cleaner Additive Film

Residue/film - cationic/siloxane additives from laundry/cleaners or treated towels; strong wetting anomalies, smeary glow, fragrance cue; typically SC-0, SC-1 if light micro-texture from improper wiping

Diagnosis summary

Fabric softener / cleaner additive film is an appearance change on glass caused by transfer of conditioning agents (e.g., cationic quaternary compounds, siloxanes, fragrances, optical brighteners) from laundered towels or multi-purpose cleaners containing “leave-behind” additives. It presents as smeary glow/halo, strong wetting anomalies (persistent beading/sheeting contrast), and directional wipe geometry.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (thin organic film on top).
- SC-1 may appear where aggressive/abrasive wiping created very shallow micro-texture while film was present; SC-2 uncommon-recheck classification if observed.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal on a small area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin hydrophobe film; SC-0; visible mainly at angle/raking; clear wetting contrast on mist. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent wetting contrast with wipe overlaps; localized SC-1 from prior abrasive wiping; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area hydrophobe contamination legible at standard distance (global sheen non-uniformity), with scattered SC-1; typically from repeated deposits over time.
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists → evaluate under M.02 (abrasion fields) or Ch.06.02 (hydrophobic coating mismatch halo) if a durable surface treatment.

Distinguishing criteria

- vs. Detergent/surfactant film (R.04.01): Both show wipe geometry; additive films feature stronger wetting contrast and often a fragrance cue; detergent film shows iridescence more commonly.
- vs.
- vs. Silicone/PIB smears (R.01.xx): Sealant smears are oily/tacky near joints and may show stringers; additive films are thin, broad and coincide with cleaning paths.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of sheen gradients and overlap lines; optional light mist frame to show beading/sheeting contrast (avoid.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-04-02-fabric-softener-cleaner-additive-film/

DSS-R.04.03 | Residue / Film / Adhesion

HVAC Aerosol / Oil Film

Residue/film - airborne oils/plasticizers from HVAC/mechanical systems; uniform smeary veil, dust capture, grille-aligned gradients; typically SC-0, SC-1 where abrasion occurred

Diagnosis summary

HVAC aerosol / oil film is an appearance change on glass from airborne oils, plasticizers, and fine condensables emitted or entrained by HVAC systems, kitchens, shop floors, or mechanical rooms, depositing as a uniform, slightly tacky veil that captures dust. It often shows gradients aligned to supply/return paths or equipment proximity. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (thin oil film).
- SC-1 may appear where abrasive cloths or dust-laden wipers produced very shallow micro-texture during attempts to clean; SC-2 uncommon-recheck classification if observed.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin oil veil; SC-0; seen mainly at angle/raking; minor dust capture. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent film with dust embed and localized SC-1 from prior wiping; limited impact at standard view. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area contamination legible at standard distance (global haze, patterning near grilles); scattered SC-1 in wipe attempts. Indicative relief: ~40-120 µm (film stack).
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists → evaluate under M.02 (abrasion fields); if soot/combustion dominates, consider E.01.03 Soot/particulate pollution film.

Distinguishing criteria

- vs.
- vs. Detergent/surfactant film (R.04.01): Detergent films show tool-path streaks and iridescence; HVAC films are uniform veils with dust embed and source-aligned gradient.
- vs. Fabric softener/additive film (R.04.02): Additive films show strong wetting contrast upon mist; HVAC films show less distinct wetting boundaries and more dust capture.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of sheen/dust embed and wipe overlaps; context frames of HVAC grilles/returns showing alignment.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-04-03-hvac-aerosol-oil-film/

DSS-R.04.04 | Residue / Film / Adhesion

Kitchen Grease / Aerosol Film

Residue/film - cooking aerosols, lipids, and volatiles; tacky amber veil, spatter freckles, dust capture; typically SC-0, localized SC-1 where wiped with abrasive/dusty cloths

Diagnosis summary

Kitchen grease / aerosol film is an appearance change on glass caused by cooking-generated aerosols (lipids, emulsifiers, sugars, combustion by-products) that condense on nearby glass. It presents as a tacky amber veil with fine spatter freckles, dust capture, and wipe trails from ad-hoc cleaning. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (lipid film on surface).
- SC-1 may occur where abrasive/dusty wiping introduced very shallow micro-texture or compacted soil; SC-2 is uncommon-recheck classification if observed.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin lipid veil; SC-0; mainly angle/raking visible; minor spatter/dust. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent grease film with spatter field and localized SC-1 (prior abrasive wiping/soil); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area tacky contamination legible at standard distance (global haze/amber cast), with scattered SC-1; typically from long dwell or poor housekeeping.
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists → evaluate under M.02 (abrasion fields); if heavy soot dominates, consider E.01.03 Soot/particulate pollution film.

Distinguishing criteria

- vs. HVAC aerosol/oil film (R.04.03): HVAC films are broader/neutral with grille-aligned gradients; kitchen grease shows amber tone and localized spatter near cooking lines.
- vs. Detergent/surfactant film (R.04.01): Detergent films show iridescence and tool-path streaks; grease shows tacky veil and spatter freckles.
- vs. Fabric softener/additive film (R.04.02): Additive films show strong wetting contrast and fragrance; grease films show odor of cooking oils and spatter morphology.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of spatter, sheen, overlap lines; context frames of kitchen equipment/hoods. Record distance/angle in-frame.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-04-04-kitchen-grease-aerosol-film/

DSS-R.04.05 | Residue / Film / Adhesion

Nicotine / Tar Film

Residue/film - tobacco/vape condensates and combustion by-products; brown/amber veil, drip legs on verticals, strong odor; typically SC-0, localized SC-1 where abrasive/dusty wiping introduced shallow micro-texture

Diagnosis summary

Nicotine / tar film is an appearance change on glass from tobacco smoke or vape condensates (nicotine, tars, glycols, aromatics) and combustion by-products that deposit as a sticky brown/amber veil. It often shows edge build, finger wipe “windows”, and drip legs on vertical glazing where condensation cycles occur. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (sticky organic film on surface).
- SC-1 may appear where dust-laden/abrasive wiping compacted soil or introduced very shallow micro-texture; SC-2 is uncommon-recheck classification if observed.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin amber veil; SC-0; mainly angle/raking visible; minor wipe marks. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent tacky film with wipe overlaps/drip legs and localized SC-1 from prior dusty wiping; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area, high-contrast discoloration legible at standard distance (global amber haze), with scattered SC-1; often long-term exposure or poor housekeeping.
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists → evaluate under M.02 (abrasion fields); if soot predominates without amber tone, consider E.01.03 Soot/particulate.

Distinguishing criteria

- vs. HVAC aerosol/oil film (R.04.03): HVAC films are clear/neutral with grille-aligned gradients; nicotine/tar shows amber tone, odor, and drip legs from condensation cycles.
- vs. Kitchen grease/aerosol film (R.04.04): Kitchen grease has spatter freckles near cooking lines; nicotine/tar is more uniform, room-wide, with entry/vaping area context.
- vs. Detergent/surfactant film (R.04.01): Detergent films show iridescence and tool-path streaks; nicotine/tar shows amber veil and odor cues.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of sheen, wipe overlaps, drip legs; context frames of smoking/vaping areas or signage/HVAC returns.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-04-05-nicotine-tar-film/

DSS-R.05.01 | Residue / Film / Adhesion

EPDM Gasket Black Rub

Residue/transfer - elastomer contact from glazing gaskets/sweeps; grey-black smudge bands, corner arcs, wipe-smeared trails; typically SC-0, localized SC-1 where abraded with dust/cloth

Diagnosis summary

EPDM gasket black rub is an appearance change on glass caused by contact transfer of ethylene-propylene-diene (EPDM) glazing gaskets, weatherstrips, door sweeps, or setting blocks. It presents as grey-black smudge bands, corner arcs mirroring gasket geometry, or wipe-smeared trails where attempts were made to clean. Transfer may include carbon black, antiozonants, and surface waxes from the elastomer.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (soft transfer on top of glass).
- SC-1 may appear where dust-laden cloths or dry abrasion created very shallow micro-texture in the smudge path; SC-2 suggests misclassification (check for mechanical abrasion M-family).
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over heavy soot-like deposits. Use polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal on a small area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Light smudge band; SC-0; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent dark band with localized SC-1 from prior dry wiping/soil; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide, high-contrast bands or multiple contact paths legible at standard distance, with scattered SC-1 where soil compacted. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, if linear scoring or micro-abrasion swirls remain → evaluate under M.01 (linear scoring) or M.02 (abrasion fields).

Distinguishing criteria

- vs. PVC plasticizer smear (R.05.02): PVC smears skew brown/amber with oily gloss and wetting anomalies; EPDM rub is grey/black, matte-smear and tracks elastomer contact lines.
- vs. Neoprene roller transfer (R.05.03): Neoprene often dotty/patchy with roller pitch; EPDM rub is continuous linear at gasket lines.
- vs. Silicone/PIB smears (R.01.xx): Sealant smears are oily/tacky near joints with corduroy/stringers; EPDM rub is dry-smudge exactly at gasket bearing zones.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of smear edge, contact line, corner arcs; context frames of gaskets/sweeps contacting the lite.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-05-01-epdm-gasket-black-rub/

DSS-R.05.02 | Residue / Film / Adhesion

PVC Plasticizer Smear / Migration Film

Residue/film - contact transfer from PVC/vinyl gaskets, wraps, edge trims, blinds; amber/brown oily smear, strong wetting anomalies, nodey contact patches; typically SC-0, localized SC-1 where abraded with dusty cloths

Diagnosis summary

PVC plasticizer smear / migration film is an appearance change on glass caused by phthalate/alt-plasticizer migration and oily exudate transfer from PVC/vinyl components (edge trims, protection wraps, temporary films, blinds/slats, gasket liners, packing). It presents as an amber/brown oily smear or veil, often with distinct contact patches (nodes/lines) and pronounced wetting anomalies.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (thin oily film on top).
- SC-1 may appear where dusty/abrasive wiping compacted soil or created very shallow micro-texture; SC-2 uncommon-recheck classification if observed.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin oily veil with wetting anomalies; SC-0; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent migration film with nodey contact patches and localized SC-1 from prior wiping; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area oily contamination legible at standard distance (global sheen non-uniformity, strong wetting contrast) with scattered SC-1. Indicative relief: ~40-120 µm (film stack).
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists → evaluate under M.02 (abrasion fields); if boundaries remain extremely sharp and durable, assess Ch.06.02 Hydrophobic.

Distinguishing criteria

- vs. EPDM gasket black rub (R.05.01): EPDM is grey/black matte along gasket lines; PVC smear is amber/oily with strong wetting contrast and may map blind/trim geometries.
- vs.
- vs. Silicone/PIB smears (R.01.xx): Sealant smears appear oily/tacky near joints with corduroy/stringers; PVC films are broader, often contact-patterned away from joints.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of sheen, contact nodes/lines, wetting contrast; context frames of PVC components in contact/proximity.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-05-02-pvc-plasticizer-smear-migration-film/

DSS-R.05.03 | Residue / Film / Adhesion

Neoprene Roller Transfer

Residue/transfer - conveyor/guide rollers, staging cradles; dotty/patchy nodes at roller pitch, smudged linear bands; typically SC-0, localized SC-1 where abrasive dust was present

Diagnosis summary

Neoprene roller transfer is an appearance change on glass caused by contact with neoprene-coated rollers or cradle pads during factory conveying, glass washing, staging, or transport. It presents as dotty or patchy contact nodes repeating at roller pitch, sometimes superimposed on smudged linear bands at consistent elevations. Deposits may include neoprene wear fines, plasticizers, and entrained shop dust.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (soft transfer on surface).
- SC-1 may present where dust-laden contact or micro-vibration created very shallow micro-texture within the transfer lane; SC-2 suggests misclassification-reassess for M.01 conveyor/belt line scoring.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not across gummy nodes. Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Faint node lane or light band; SC-0; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent node lane with localized SC-1 (dust-assisted micro-texture); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): High-contrast, wide lane/band legible at standard distance; scattered SC-1 in nodes; multiple lanes or wide coverage. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, linear incisions with chip-flank sparkle or SC-2 persist → evaluate under M.01.04 Conveyor/belt line scoring or M.01 (linear scoring).

Distinguishing criteria

- vs. Roller / handling rail transfer (R.03.03): R.03.03 shows broad level bands without distinct node pitch; neoprene roller shows distinct repeating nodes at constant spacing.
- vs. Suction cup rings (R.03.01): Cup prints are large circles/ovals with lip+puck; neoprene nodes are small, evenly spaced ticks along a lane.
- vs. Paint overspray (R.02.01): Overspray is random speckle lacking constant pitch; neoprene nodes are periodic and align in tracks.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of node pitch, lane edges, band texture; context frames showing consistent elevation across panes and any.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-05-03-neoprene-roller-transfer/

DSS-R.06.01 | Residue / Film / Adhesion

Aluminum Rub / Grey Smear

Residue/transfer - contact with aluminum frames/extrusions/tools; cool grey metallic smear, linear along contact paths; typically SC-0, localized SC-1 where dry abrasion occurred

Diagnosis summary

Aluminum rub / grey smear is an appearance change on glass caused by mechanical contact with aluminum components (frames, extrusions, setting blocks/shims, ladders, straightedges, glazing tools) that leave a metallic grey transfer film. It typically tracks linear contact paths at frame interfaces or along tool routes. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (transfer film on top).
- SC-1 appears where dry wiping with dust created very shallow micro-texture within the smear; SC-2 suggests misclassification-check for M.01 linear scoring.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Light metallic smear; SC-0; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent grey smear with localized SC-1 from prior dry wiping; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad, high-contrast smears/bands legible at standard distance, with scattered SC-1 where soil compacted. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, any incised lines with chip-flank sparkle or SC-2 persist → evaluate under M.01 (linear scoring).

Distinguishing criteria

- vs. EPDM gasket rub (R.05.01): EPDM is black/charcoal and tracks gasket lines; aluminum is cool grey metallic and tracks metal/tool contact paths.
- vs. PVC plasticizer smear (R.05.02): PVC is amber/oily with wetting anomalies; aluminum is dry grey without oil beading behavior.
- vs. Steel/ferrous rub (R.06.02): Ferrous rub skews darker/black, may stain fingers, and can show brown oxidation; aluminum remains light grey.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of smear edges and drag direction; context frames showing aluminum components/tools.
- MSRT result (substrate): After a small reveal patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-06-01-aluminum-rub-grey-smear/

DSS-R.06.02 | Residue / Film / Adhesion

Steel / Ferrous Rub / Black Smear

Residue/transfer - contact with carbon steel or ferrous hardware/tools; dark grey-to-black smear, may oxidize brown; typically SC-0, localized SC-1 where abraded

Diagnosis summary

Steel / ferrous rub / black smear is an appearance change on glass caused by mechanical contact with carbon steel or ferrous components (fasteners, brackets, trowels, knives, ladders, window bars, site hardware) leaving a dark grey/black transfer. May slowly oxidize to brown at the edges if moisture is present. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (transfer film on surface).
- SC-1 appears where dry abrasive wiping or grit under contact created very shallow micro-texture; SC-2 suggests misclassification-check for M.01 linear scoring or Th.01.02 hot-particle embed.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Light dark smear; SC-0; mainly angle/raking visible. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent black smear with localized SC-1 from prior dry wiping/soil; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad/high-contrast smears legible at standard distance, with scattered SC-1 and possible brown oxidation; indicates extended dwell or repeated contact. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, any incised lines with chip-flank sparkle or SC-2 persist → evaluate under M.01 (linear scoring).

Distinguishing criteria

- vs. Aluminum rub (R.06.01): Aluminum is cool/light grey; ferrous rub is dark grey/black, can finger-stain, and may oxidize brown.
- vs. EPDM gasket rub (R.05.01): EPDM is black but follows gasket geometry; ferrous rub follows tool/hardware paths and may show oxidation halo.
- vs. Hot-particle embed (Th.01.02): Hot particle shows pit/nodule field, sometimes with rusting dots; ferrous rub is smear-film without pits.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of drag, oxidation halo, edge feather; context frames showing steel tools/hardware proximity.
- MSRT result (substrate): After a small reveal patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-r-06-02-steel-ferrous-rub-black-smear/

DSS-E.01.01 | Environmental Exposure / Weathering

Salt-Spray Crystals / Shoreline Frosting

Environmental residue/attack - marine/coastal aerosol deposition; crystalline rings, feathered frosting at windward exposures; typically SC-0 for loose crystals/films, SC-1 where micro-texture begins from cyclic wet/dry

Diagnosis summary

Salt-spray crystals / shoreline frosting is an appearance change on glass caused by marine/coastal aerosols (sea salts and hygroscopic constituents) depositing and cycling via evaporation/condensation. It presents as crystalline rings/halos, feathery “frosted” veils on windward façades, and recurring drip/rivulet maps under prevailing winds.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for loose crystals/films on the surface.
- SC-1 may appear where micro-texture begins from repeated cycles with fines/soils (very shallow relief in raking). SC-2 suggests misclassification-check Ch.03.03 mineral etching or M.02 abrasion.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected on the worked face. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Discrete crystal film/rings; SC-0; mainly angle/raking visible; clears with proper reveal on test patch. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent frosting/shoreline veil after reveal with localized SC-1 (incipient micro-texture from cycling/soils); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area matte fields / recurrent rivulet maps legible at standard distance with scattered SC-1; indicates long dwell and frequent exposure.
- Reclassify when: Post-reveal, if non-directional micro-texture persists without crystalline residue → assess Ch.03.03 mineral etching; if linear abrasion swirls are evident, assess M.02.

Distinguishing criteria

- vs.
- vs. Detergent/surfactant film (R.04.01): Detergent veils show iridescence and wipe geometry; salt spray shows granular sparkle and shoreline halos without cleaning tool paths.
- vs. Soot/particulate film (E.01.03): Soot is grey/black, dry and transfers to cloth; salt crystals are sparkly/whitish and often deliquescent (re-wet into clear patches).

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of crystal fields, shoreline edges, rivulet maps; context frames of façade orientation / coastline /.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-01-01-salt-spray-crystals-shoreline-frosting/

DSS-E.01.02 | Environmental Exposure / Weathering

Atmospheric Corrosion Matte (SOx/NOx / “Acid Rain”)

Environmental attack - pollutant-assisted weathering of soda-lime glass surfaces; non-directional milky matte, loss of specular clarity, rivulet/edge bias from runoff; typically SC-1 when micro-texture forms; SC-0 if only residue present

Diagnosis summary

Atmospheric corrosion matte is an appearance change on glass driven by acidic or pollutant-laden moisture (e.g., SOx/NOx, industrial emissions) and cyclic wet/dry exposure, producing surface hydration/leaching and very fine micro-texture. It presents as a non-directional, low-contrast milky haze that reduces specular clarity and can map runoff/edge dwell. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 when only residue/films remain pre-etch (reveal patch clears to clarity).
- SC-1 when micro-texture exists (slight tactile interruption without chip flanks); SC-2 uncommon-if present, re-evaluate for Ch.03.03 mineral etching or M.02 abrasion fields.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Slight veil removable on reveal patch; SC-0; visible mainly at angle/raking. Indicative relief: 0-10 µm (optical film only).
- CAT-2 (Light): Persistent non-directional matte post-reveal with SC-1 in zones; limited standard-view impact. Indicative relief: ~10-40 µm (incipient micro-texture).
- CAT-3 (Moderate): Wide-area milkiness legible at standard distance; consistent SC-1; reflects long dwell/high exposure. Indicative relief: ~40-120 µm.
- Reclassify when: Distinct rings/runs with crystalline edges dominate → assess Ch.03.02 Mineral staining; etched fields with directional marks → consider M.02 abrasion overlay; pits/nodules → Th.01 hot.

Distinguishing criteria

- vs.
- vs. Mineral system (Ch.03): Minerals exhibit rings/runs and may transition to etch halos; atmospheric matte is more global, edge-biased, and non-crystalline.
- vs. Fabric softener/additive film (R.04.02): Additive films show strong wetting contrast and fragrance; atmospheric matte shows uniform scatter with environmental context.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of uniform scatter and edge/rivulet bias; façade context showing pollution sources/windward orientation.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-01-02-atmospheric-corrosion-matte-sox-nox-acid-rain/

Damage Specification Standards
Printable classification one-sheet

DSS-E.01.03 | Environmental Exposure / Weathering

Soot / Particulate Pollution Film

Environmental residue - carbonaceous/industrial particulates; grey-to-black dry film, fingerprint lifts, directional fall-out bias; typically SC-0, localized SC-1 where dust-laden wiping induced shallow micro-texture

Diagnosis summary

Soot / particulate pollution film is an appearance change on glass produced by airborne particulates (carbon soot, diesel exhaust, industrial dust, ash) that accumulate as a dry, grey-black veil. It often shows directional deposition based on airflow, edge build, and finger “lift” windows where casual contact removed soil. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (dry particulate on top).
- SC-1 may appear where abraded while dusty (dirty microfiber, paper towels) created very shallow micro-texture; SC-2 suggests misclassification-check for M.02 abrasion fields or Th.01 hot-particle if pits/nodules present.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Light soot veil; SC-0; mainly angle/raking visible; lifts completely on reveal patch. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent dark veil with wipe windows; localized SC-1 from prior dusty wiping; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area darkening legible at standard distance (global contrast loss), with scattered SC-1; indicates long dwell/high deposition.
- Reclassify when: After true residue lift, modeled micro-texture or SC>0 persists → evaluate M.02 abrasion fields; if rust-toned dots/pits are evident, consider Th.01.02 grinder spark embed; if oily amber.

Distinguishing criteria

- vs. HVAC aerosol/oil film (R.04.03): HVAC films feel oily, show wetting anomalies; soot is dry, transfers to cloth, with less wetting contrast.
- vs. Kitchen grease (R.04.04): Grease has amber tone, tacky feel, spatter; soot is grey/black, uniform, dry.
- vs. Nicotine/tar (R.04.05): Nicotine shows amber/brown cast and odor; soot is neutral/dark grey to black, odorless/combustion-like.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of particulate texture, wipe windows, deposition gradients; façade context showing traffic/stack sources.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-01-03-soot-particulate-pollution-film/

DSS-E.01.04 | Environmental Exposure / Weathering

Condensation / Runoff Patterns

Environmental residue/attack - recurring moisture paths concentrating soils/minerals; rivulet maps, drip legs, head-to-sill curtains; typically SC-0 for residue films, SC-1 where micro-texture develops from cyclic deposition

Diagnosis summary

Condensation / runoff patterns are appearance changes on glass driven by recurrent water paths (dew, HVAC condensation, building runoff, irrigation overspray) that concentrate dissolved soils/minerals and produce rivulet maps, drip legs, curtains, and edge blooms. With prolonged cycling, very shallow micro-texture may form in preferred paths. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for residue films that lift on reveal.
- SC-1 where incipient micro-texture is present inside flow paths (slight tactile interruption, no chip flanks). SC-2 suggests misclassification-evaluate Ch.03.03 mineral etching or M.02 abrasion if present.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Clear rivulet/drip pattern comprised of residue only; SC-0; mainly angle/raking visible; lifts on reveal patch. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent flow mapping post-reveal with localized SC-1 (incipient micro-texture from cycling); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area, legible flow curtains at standard distance with consistent SC-1 and low-contrast matte inside paths; indicates long dwell/high frequency. Indicative relief: ~40-120 µm.
- Reclassify when: Distinct white/grey crystalline rims or etched halos dominate → evaluate Ch.03 (mineral deposits/staining/etching); linear swirl/abrasion → M.02 abrasion fields.

Distinguishing criteria

- vs. Hard-water mineral system (Ch.03): Minerals show crystalline rings/rims and can progress to etch; pure runoff mapping may lack crystals and lifts on reveal.
- vs. Detergent/surfactant film (R.04.01): Detergent presents tool-path streaks/iridescence; runoff follows gravity paths from a structural origin with no wipe geometry.
- vs. Atmospheric corrosion matte (E.01.02): Atmospheric matte is global/non-directional; runoff patterns are directional with clear origins and branching trails.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of flow edges/matte fields; context frames of origins (head/drip edge/sprinkler/diffuser) and multiple.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-01-04-condensation-runoff-patterns/

DSS-E.02.01 | Environmental Exposure / Weathering

Wind-Borne Sand Abrasion (Eolian)

Environmental abrasion - airborne mineral particulates driven by wind; directional frosting, lee-side bias, frame-adjacent “blast” zones; typically SC-1 to SC-2 where micro-texture/incisions exist

Diagnosis summary

Wind-borne sand abrasion is an appearance change on glass caused by air-entrained mineral particulates (silica, feldspar, grit) scouring exposed faces under sustained winds. It presents as directional frosting/haze, micro-pitting, and fine linear incisions concentrated on windward elevations and edge “blast” zones near frames and corners. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Commonly SC-1 (fine micro-texture) progressing to SC-2 where micro-pits/incipient incisions are present; SC-0 only at earliest film-only stages.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Incipient directional haze; SC-1 (micro-texture), minimal standard-view impact; isolated shallow ticks. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Distinct directional frosting legible at standard distance; consistent SC-1 with scattered SC-2 from micro-pits/incisions. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Wide-area matte/frosted fields and roughened strike zones clearly visible at standard and wide-field views; SC-2 prevalent with micro-pitting.
- Reclassify when: If fused nodules/peppering or rust-toned dots appear → evaluate Th.01.02 grinder spark embed; if patterns are non-directional milky without catch → consider E.01.02 atmospheric matte; if.

Distinguishing criteria

- vs. Atmospheric corrosion matte (E.01.02): Atmospheric matte is non-directional and edge/rivulet biased; eolian abrasion is directional with prevailing-wind alignment.
- vs. Residue films (R-family): Residues show wipe geometry, wetting anomalies, or odor; eolian abrasion shows grain-aligned scatter, no wipe arcs, and tactile catch at SC-1/2.
- vs. Mineral etching (Ch.03.03): Mineral etch maps drip/ring halos; eolian abrasion forms broad directional fields and edge blast unrelated to water paths.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of directional micro-texture, edge blast, and height gradient; façade context showing ground.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-1/SC-2, or SC-0 if truly film-only).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-02-01-wind-borne-sand-abrasion-eolian/

DSS-E.02.02 | Environmental Exposure / Weathering

Dust-Storm Micro-Pitting

Environmental abrasion - high-velocity particulate impacts during dust/sand storms; peppered micro-craters, lee/height gradients, edge “blast” zones; typically SC-2 in impacted fields, SC-1 at margins

Diagnosis summary

Dust-storm micro-pitting is an appearance change on glass caused by high-velocity mineral particulate impacts during dust/sand storm events, producing peppered micro-craters and a matte scatter field. Concentrations track wind exposure, building geometry, and near-grade vortices, often forming edge blast zones and height gradients. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Commonly SC-2 within peppered fields (distinct interruption over crater rims); SC-1 at transition margins; SC-0 only outside impact zones.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.
- Visual signature

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Sparse micro-pits in bands or corners; SC-1 at margins, SC-2 intermittent; minimal standard-view impact. Indicative relief: ~20-60 µm (pit depth).
- CAT-3 (Moderate): Continuous pepper field legible at standard distance; SC-2 common; matte between pits. Indicative relief: ~60-150 µm typical.
- CAT-4 (Severe): High-density peppering and rough edge blast clearly visible at standard and wide-field, frequent coalesced pits; SC-2 prevalent. Indicative relief: ~150-350+ µm local maxima.
- Reclassify when: If fused metallic nodules/rust dots are observed → evaluate Th.01.02 grinder spark embed; if damage is continuous directional frost with few discrete pits → consider E.02.01 eolian.

Distinguishing criteria

- vs. Hot-particle peppering (Th.01.02): Hot particles show fused metal beads/pits (often rust-toned) and thermal halos; dust-storm pits are mineral impact craters without metallic residues.
- vs. Eolian frosting (E.02.01): Eolian presents directional micro-texture with fewer discrete pits; dust-storm micro-pitting shows random peppering superimposed (often both coexist).
- vs. Stone/seed defects (P.02.03): Factory stones are internal inclusions or polished-out craters with production context; storm pits are surface impacts with exposure mapping.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of individual pits, density maps, edge blast zones; façade context documenting windward/lee sides and site.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-1/SC-2) within pepper fields and outside as control.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-02-02-dust-storm-micro-pitting/

DSS-E.03.01 | Environmental Exposure / Weathering

Algae / Biofouling Film

Biological residue - microbial/algal growth on moisture-retentive façades; green/brown film, strandy colonies at edges/sealants, wetting anomalies; typically SC-0, localized SC-1 where biofilm traps grit and induces shallow micro-texture

Diagnosis summary

Algae / biofouling film is an appearance change on glass resulting from microbial colonization (algae, cyanobacteria, biofilms) under persistent moisture and nutrient availability (organics, dust). It presents as green to brown films, strand/filament colonies at gasket/edge zones, and wetting anomalies where biofilm alters surface energy. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (soft biofilm).
- SC-1 localized where entrained grit or repeated wiping created very shallow micro-texture; SC-2 suggests misclassification-check M.02 abrasion fields or Ch.03.03 mineral etch if matte persists post-reveal.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin chromatic biofilm; SC-0; angle/raking visible; lifts on reveal patch. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent film/colonies with localized SC-1 from grit entrapment or prior wiping; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area growth clearly legible at standard distance with edge blooms and recurring wetting anomalies; SC-1 scattered. Indicative relief: ~40-120 µm.
- Reclassify when: Post-reveal, if non-directional matte persists without biofilm → evaluate E.01.02 atmospheric matte; if white crystalline rims/etch dominate → Ch.03 mineral system; if linear abrasion.

Distinguishing criteria

- vs. Algae-like mineral staining (Ch.03.02): Mineral films are inorganic, whitish/grey, with crystalline rims; biofilm is chromatic (green/brown) and organic, often slimy when wet.
- vs. Kitchen/HVAC films (R.04.03/04): Those are oily/amber and track air/grease paths; biofilm tracks moisture dwell and nutrient load.
- vs. Mold on sealants (off-glass): Mold resides on sealant/frames; confirm on-glass presence before classification.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of colonies/filaments, wetting anomalies, edge blooms; context of moisture sources/landscaping/weep details.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-03-01-algae-biofouling-film/

DSS-E.03.02 | Environmental Exposure / Weathering

Lichens / Moss (Rough Adhesion)

Biological residue/growth - symbiotic fungi-algae (lichens) and bryophytes (moss) adhering where moisture and nutrients persist; rough, tenacious pads/tufts, edge colonization; typically SC-0 for organic mass, localized SC-1 where grit is trapped or prior abrasive wiping occurred

Diagnosis summary

Lichens / moss represent biological colonization on glass under persistent damp/shade with nutrient deposition (dust, organics). They appear as tenacious rough pads (lichens) or small green tufts (moss), commonly edge-biased near gaskets, sealants, weeps, horizontal ledges, and shaded façades. Classification is appearance-only per VIS (method-agnostic). Inspect after Non-Invasive Reveal under VIS lighting/geometry;

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (organic mass on surface).
- SC-1 can register adjacent to colonies where grit is embedded or prior abrasive wiping created very shallow micro-texture.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a small reveal patch around (not through) a colony. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Sparse, small colonies with SC-0 surroundings; visible mainly in raking/angle; lifts when organic mass is dislodged on test patch.
- CAT-2 (Light): Multiple colonies/edge clustering with localized SC-1 where grit entrapment created slight micro-texture; limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Broad colonization legible at standard distance (edge belts/ledges), scattered SC-1, persistent wetting anomalies after rinse.
- Reclassify when: Post-reveal, if non-directional substrate matte remains without organics → E.01.02 atmospheric matte; if white crystalline rims/etch present → Ch.03 mineral system; if linear abrasion.

Distinguishing criteria

- vs. Algae/biofilm (E.03.01): Algae is thin chromatic film; lichens/moss are discrete, raised colonies with physical relief.
- vs. Sealant/mastic smear (R.01.xx): Sealant residue is oily/tacky with stringers; colonies are dry/vegetative and retain moisture when misted.
- vs. Mineral accretions (Ch.03.01/02): Minerals are inorganic, crystalline/white-grey; colonies are green/olive/grey, organic, and compressible.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of colony relief, attachment edges, edge clustering; façade context showing shade/moisture/vegetation.
- MSRT result (substrate): After a small reveal patch around the colony, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-03-02-lichens-moss-rough-adhesion/

DSS-E.03.03 | Environmental Exposure / Weathering

Tree Sap / Organic Exudate Shadow

Biological/organic residue & shadowing - resin/exudate droplets, smears, UV-browned films; amber tacky spots, stringers, wetting anomalies; typically SC-0 for fresh residue, localized SC-1 where long dwell/UV causes very shallow micro-texture; reclassify to chemical etch if substrate matte persists

Diagnosis summary

Tree sap / organic exudate shadow is an appearance change on glass arising from plant resins/exudates (e.g., conifer resin, honeydew, plant gums) that deposit as amber droplets/films and may brown under UV. It presents as tacky amber spots, stringy smears, or browned films with distinct wetting anomalies; after removal, a shadow (tone change) may remain where long dwell + UV altered the near-surface.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for fresh/tacky residue (film on top).
- SC-1 where long dwell/UV leaves very shallow micro-texture or resin entraps fine grit; SC-2 is atypical-if present after true residue lift, reassess for Ch.01/Ch.02 chemical etch or Ch.03.03 mineral etching.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a true residue lift test on a contained patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Discrete amber droplets/film; SC-0; angle/raking visible; lifts on reveal test patch without shadow. Indicative relief: 0-10 µm (optical film).
- CAT-2 (Light): Persistent “shadow” or slight wetting contrast after residue lift with localized SC-1; limited standard-view impact.
- CAT-3 (Moderate): Wide-area browned film/shadowing legible at standard distance, scattered SC-1; indicates long dwell + UV or repeated deposition. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue removal, if modeled substrate micro-texture persists (non-directional matte with SC-1/2) → evaluate E.01.02 atmospheric matte or Ch.02 alkaline attack depending on.

Distinguishing criteria

- vs. Kitchen grease/HVAC oil (R.04.03/04): Those are oily/amber veils tracing air paths; sap shows discrete beads/stringers and aligns with tree drip geometry.
- vs. PVC plasticizer smear (R.05.02): PVC films are oily amber with strong wetting anomalies along component contact; sap is tacky, often with meniscus beads and seasonal context.
- vs. Mineral staining/etch (Ch.03): Mineral halos are white/grey crystalline-edged; sap amber/brown, sometimes leaves color shadow after lift without crystalline rims.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of droplet meniscus, stringers, and post-lift shadow boundary; context frames showing canopy/drip line.
- MSRT result (substrate): After a small reveal test patch and true residue lift, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-03-03-tree-sap-organic-exudate-shadow/

DSS-E.03.04 | Environmental Exposure / Weathering

Avian Residue Acid Shadow

Biological/organic residue & acid shadowing - bird droppings with urates/organics; discrete splats with radial feathering, white urate crust; post-lift color/shine “shadow”; typically SC-0 for fresh residue, localized SC-1 where long dwell/heat induces very shallow micro-texture; reclassify to chemical etch if substrate matte persists

Diagnosis summary

Avian residue acid shadow is an appearance change on glass produced by bird droppings (mixture of uric acid/urates, water, organics) that deposit as discrete splats and may bleach or dull the underlying glass after removal, leaving a color/shine “shadow.” High dwell time, sun/heat, and repeated incidents increase the likelihood of near-surface alteration. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for fresh/dry crust (residue on top).
- SC-1 localized if long dwell + heat produced very shallow micro-texture or trapped grit; SC-2 is atypical-if present after true residue lift, reassess for Ch.01 (acid attack) or Ch.03.03 (mineral etching).
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a true residue lift test on a contained patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Discrete splat residues that fully lift on reveal; SC-0; visible mainly at angle/raking. Indicative relief: 0-10 µm (optical film/crust only).
- CAT-2 (Light): Post-lift shadow (minor gloss/tone change) with localized SC-1; limited standard-view impact. Indicative relief: ~10-40 µm (incipient near-surface change).
- CAT-3 (Moderate): Multiple/overlapping splat shadows legible at standard distance, scattered SC-1; indicates long dwell, heat exposure, or repeated incidents. Indicative relief: ~40-120 µm
- Reclassify when: After true residue removal, if modeled matte persists with SC-1/2 beyond the splat footprint → consider Ch.01 (acid attack); if crystalline ring/etch halo consistent with hard-water.

Distinguishing criteria

- vs. Mineral staining/etch (Ch.03): Minerals present white/grey crystalline rings with run mapping; avian shows distinct splat morphology with urate crust and radial feathering.
- vs. Organic sap (E.03.03): Sap is amber/tacky with stringers; avian is white/grey crust with organic center and splat geometry.
- vs. Detergent/surfactant film (R.04.01): Detergent shows wipe streaks/iridescence; avian shows radial splash, ring, and localized post-lift shadow.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of splat edge, feathering, post-lift shadow boundary; context frames showing perch/nesting features above.
- MSRT result (substrate): After a small reveal test patch and true residue lift, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-03-04-avian-residue-acid-shadow/

DSS-E.04.01 | Environmental Exposure / Weathering

Recurring Drip / Run Staining Pattern

Environmental residue/attack - repetitive gravity-flow paths concentrating soils/minerals from architectural features; vertical drip legs, fan runs, repeat at identical elevations; typically SC-0 for residue films, SC-1 where cyclic deposition forms very shallow micro-texture; reclassify to mineral system if crystalline rims/etch are dominant

Diagnosis summary

Recurring drip/run staining is an appearance change on glass caused by repeated gravity-driven moisture paths that carry soils/minerals/organics from upstream features (caps, signage letters, flashings, parapets, shading fins). It presents as vertical “drip legs,” fan-shaped runs, or curtains that repeat at the same height across adjacent lites beneath the same source detail.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 where contamination is residual film only and lifts on reveal.
- SC-1 where incipient micro-texture exists from cyclic deposition/soils. SC-2 suggests misclassification-consider Ch.03.03 mineral etching or M.02 abrasion.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Legible drip runs comprised of residue film only; SC-0; mainly angle/raking visible; lifts on reveal. Indicative relief: 0-10 µm.
- CAT-2 (Light): Persistent runs post-reveal with localized SC-1 (incipient micro-texture); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area run curtains legible at standard distance with consistent SC-1 and interior low-contrast matte; indicates long dwell/high frequency. Indicative relief: ~40-120 µm.
- Reclassify when: White/grey crystalline rims, ringed edges, or etched halos dominate → Ch.03 Mineral system (Deposits/Staining/Etching).

Distinguishing criteria

- vs.
- vs. Hard-water mineral system (Ch.03): Minerals exhibit crystalline rims/etch; recurring drip runs may be film-only-verify with reveal + MSRT.
- vs. Detergent/surfactant film (R.04.01): Detergent shows tool-path streaks/iridescence; recurring runs follow gravity from a common elevation with no wipe geometry.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of leg edges/interior matte; context frames of source detail and adjacent panes showing height repetition.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-04-01-recurring-drip-run-staining-pattern/

DSS-E.04.03 | Environmental Exposure / Weathering

Curtain Wall Runoff Staining (Adjacent Materials Interactions)

Environmental residue/attack - soils/minerals/chemicals mobilized from adjacent envelope materials; vertical bay-to-bay run curtains, tannin/metal oxide tones, silicone/bitumen halos; typically SC-0 for film-only, localized SC-1 where cyclic deposition produces very shallow micro-texture; reclassify to mineral system if crystalline rims/etch dominate

Diagnosis summary

Curtain wall runoff staining (adjacent materials interactions) is an appearance change on glass caused by moisture transporting constituents from neighboring materials-sealants, gaskets, metals, masonry, timber, coatings-onto the glass surface during rain/dew/condensation events.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 where deposits are film-only and lift on reveal.
- SC-1 in zones of long-cycle deposition producing very shallow micro-texture; SC-2 suggests misclassification-check Ch.03.03 mineral etching or M.02 abrasion.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Tone-specific run curtains comprised of residue only; SC-0; primarily angle/raking visible; lifts on reveal. Indicative relief: 0-10 µm.
- CAT-2 (Light): Persistent toned runs post-reveal with localized SC-1 (incipient micro-texture); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area, bay-repeat staining legible at standard distance with consistent SC-1 inside curtains; indicates long dwell/high frequency. Indicative relief: ~40-120 µm.
- Reclassify when: White/grey crystalline rims or etched halos dominate → Ch.03 Mineral system; linear wipe/iridescence → R.04.01 Detergent/surfactant film; metallic speck/pits → Th.01.02 grinder spark.

Distinguishing criteria

- vs. E.04.01 recurring drip/run (generic): E.04.03 is used when source chemistry imparts distinctive tone/halo attributable to specific adjacent materials.
- vs.
- vs. Coating anomalies (Co-family): Coating issues are planar/patchy on designated faces, not gravity-driven from upstream materials.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of run edges, tonal character, and interior matte; context frames showing upstream materials and.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-04-03-curtain-wall-runoff-staining-adjacent-materials-interactions/

DSS-E.05.01 | Environmental Exposure / Weathering

UV-Induced Browning / Yellowing of Residues

Photo-degradation of films - chromophore formation/oxidation within organic residues; amber/yellow cast, loss of clarity, wetting anomalies; typically SC-0 for film-only, localized SC-1 where long dwell/UV yields very shallow micro-texture

Diagnosis summary

UV-induced browning/yellowing of residues is an appearance change on glass caused by photo-oxidation and polymerization within organic surface films (detergent remnants, maintenance additives, kitchen/HVAC aerosols, tree resins/honeydew carryover), producing a persistent amber/yellow veil and wetting anomalies. With prolonged exposure, very shallow micro-texture may develop beneath the film.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film on top).
- Local SC-1 where long dwell + UV produced incipient substrate micro-texture or where grit was trapped in the film; SC-2 suggests misclassification-consider M.02 abrasion fields or Ch.03.03 mineral etching if matte persists after.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a true film-lift test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin amber veil; SC-0; angle/raking visible; clears fully on reveal patch. Indicative relief: 0-10 µm (optical film only).
- CAT-2 (Light): Persistent amber cast post-reveal with localized SC-1 (incipient substrate change); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area discoloration legible at standard distance, scattered SC-1; indicates long dwell/high UV dose or repeated deposition. Indicative relief: ~40-120 µm.
- Reclassify when: If oily/neutral film without yellowing dominates → R.04.03 HVAC oil or R.04.04 kitchen grease; if white/grey crystalline rims/etch dominate → Ch.03 mineral system; if linear swirls/webs.

Distinguishing criteria

- vs.
- vs. Tree sap shadow (E.03.03): Sap shows discrete beads/stringers and post-lift shadow; UV-browned films are more uniform/patchy with wipe or airflow geometry.
- vs. Atmospheric matte (E.01.02): Atmospheric matte is non-directional, often edge/rivulet-biased; browned films show wipe/air-path mapping and color shift.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of film edges, color cast, and wetting anomalies; context frames showing sun-exposed elevation or source.
- MSRT result (substrate): After a small reveal test patch and true film-lift, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-05-01-uv-induced-browning-yellowing-of-residues/

DSS-E.05.02 | Environmental Exposure / Weathering

Oxidation Darkening of Films

Photo-degradation of films - oxidative crosslinking/soot capture within organic residues; grey→brown dark veil, loss of specular “snap,” wetting anomalies; typically SC-0 for film-only, localized SC-1 where long dwell yields very shallow micro-texture

Diagnosis summary

Oxidation darkening of films is an appearance change on glass caused by oxidative aging of organic surface residues (maintenance detergents/additives, HVAC/kitchen aerosols, traffic-related organics) and/or particulate entrainment (soot/oxyde fines) within those films. It presents as a neutral grey to brown dark veil, often patchy and aligned with wipe paths or airflow cones, with wetting anomalies at boundaries.

Field identification cues

- Surface-catch class (MSRT)
- Generally SC-0 (aged film on top).
- Local SC-1 where long dwell entrained grit or led to incipient substrate micro-texture; SC-2 suggests misclassification-evaluate M.02 abrasion fields or Ch.03.03 mineral etching if matte persists after true film lift.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a true film-lift test. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin dark veil; SC-0; angle/raking visible; clears fully on reveal patch. Indicative relief: 0-10 µm (optical film only).
- CAT-2 (Light): Persistent dark cast post-reveal with localized SC-1 (incipient substrate change or grit-imprinted micro-texture); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Wide-area darkening legible at standard distance, scattered SC-1; indicates long dwell/re-application cycles and oxidative aging. Indicative relief: ~40-120 µm.
- Reclassify when: Amber/yellow hue dominates tied to UV → consider E.05.01 UV-browning; oily neutral film with strong wetting anomalies → R.04.03 HVAC oil / R.04.04 kitchen grease; white/grey crystalline.

Distinguishing criteria

- vs. Soot/particulate film (E.01.03): Soot is dry/transferable and often black; oxidation-darkened films are bound, show wipe geometry, and can be brown/grey.
- vs. UV-browning (E.05.01): UV-browning trends amber/yellow; oxidation darkening trends neutral grey/brown, often pollutant-associated.
- vs. Nicotine/tar (R.04.05): Nicotine is amber/brown with odor and interior airflow mapping; oxidation darkening commonly includes exterior pollutant capture signatures.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of film edges, color/density variations, and wetting anomalies; context frames of.
- MSRT result (substrate): After a small reveal test patch and true film-lift, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-e-05-02-oxidation-darkening-of-films/

DSS-V.01.01 | Vandalism

Sandblast / Abrasive-Blast Etch (Uniform Frosted Field)

Intentional surface modification - abrasive impact removal of surface glass; uniformly matte/frosted fields with boundary masks; typically SC-2 across worked areas; depth depends on media, pressure, dwell, and mask design

Diagnosis summary

Sandblast / abrasive-blast etch is an appearance change on glass produced by propelled abrasive media (e.g., silica, aluminum oxide, garnet, glass bead, soda) that erodes the surface to create uniform or patterned matte/frosted fields. Presentations include full-field frosting, masked graphics, and stencil lettering. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-2 typical across blasted fields (distinct interruption, granular feel).
- SC-1 at light/feathered work or overspray halos; SC-0 outside the worked area.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Feathered/overspray halo only; SC-1 within halo; limited standard-view impact outside raking. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Defined decorative/graphic blast with clear matte field legible at standard distance; SC-2 prevalent within field. Indicative relief: ~40-150 µm.
- CAT-4 (Severe): Full-field or deep decorative blast producing high-contrast frosting visible at standard and wide-field views; SC-2 throughout, occasionally with micro-pitting from coarse media.
- Reclassify when: If the presentation is acid-etched (chemical) rather than abrasive → V.02.02 / Ch.01.02 per chemistry; if linear score lines with chip flanks dominate → M.01; if fused metallic peppering.

Distinguishing criteria

- vs.
- vs. Coating anomalies (Co-family): Coating patchiness is planar on designated coated faces and lacks mask-sharp boundaries; blasting shows hard edges and granular catch.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of field texture and mask edge; context frames of full graphic/field. Record distance/angle in-frame.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass in field and outside as control; record SC-class (SC-2 field, SC-0 control,.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-v-01-01-sandblast-abrasive-blast-etch-uniform-frosted-field/

DSS-V.01.02 | Vandalism

Scribed / Engraved Tool Marks

Intentional surface modification - hard-point incision of glass with metal/ceramic tools; discrete linear grooves, alphanumerics, or graphic outlines; chip-flank sparkle under raking; typically SC-2 along grooves, SC-1 at feathered tails

Diagnosis summary

Scribed / engraved tool marks are appearance changes created by hard-point contact (carbide/steel points, diamonds, glass cutters, masonry nails, ceramic chips) drawn across the glass surface to inscribe letters, numbers, outlines, or linear tags. The action cuts and plows the surface, producing grooves with micro-chipping (chip flanks) and bright edge sparkle in raking light.

Field identification cues

- Surface-catch class (MSRT)
- SC-2 along primary grooves (distinct interruption; granular edge feel).
- SC-1 at light passes/feathered tails; SC-0 outside the inscription.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Fine incised lines legible in raking, intermittent SC-1-SC-2, minimal impact at standard view; micro-chips sparse. Indicative relief: ~20-60 µm.
- CAT-3 (Moderate): Clearly legible strokes/letters at standard distance; consistent SC-2; chip flanks evident along runs and at intersections. Indicative relief: ~60-150 µm.
- CAT-4 (Severe): Bold, deep engraving and/or dense inscriptions visible at standard and wide-field; frequent micro-fracture islands, flaked nodes, occasional local divots.
- Reclassify when: If the field is uniform matte within masked boundaries → V.01.01 abrasive blast; if cream/meniscus residue, runs, or brush texture present → V.02.02/Ch.01 acid etch; if linear scoring.

Distinguishing criteria

- vs.
- vs. Acid-etch graffiti (V.02.01): Acid tags leave whitened, modeled micro-texture with flow/cream artifacts; scribed marks are cut grooves with chip-flank sparkle and tactile catch.
- vs. Fine abrasion swirls (M.02.01): Swirls are curvilinear fields lacking clear stroke intent, typically SC-1; scribing is deliberate strokework with SC-2 grooves.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of chip flanks, entry/exit points, intersections; context frames showing reach/access.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass through stroke body and tail; record SC-class (SC-2 body, SC-1 tail, SC-0.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-v-01-02-scribed-engraved-tool-marks/

DSS-V.02.01 | Vandalism

Acid-Marker Tagging (HF-Bearing)

Intentional chemical etch - field-applied acids/fluoride gels; whitened modeled micro-texture with run legs/cream swirls/meniscus rings; typically SC-2 in worked strokes, SC-1 at feather; depth depends on chemistry, dwell, and reapplication

Diagnosis summary

Acid-marker tagging is an appearance change produced by field-applied acidic agents (often HF-bearing gels/creams or “etch pens”) that chemically attack silica, creating whitened, matte micro-texture in letter/stroke geometry. Presentations include freehand tags, initials, and panel-fill scribbles; artifacts such as cream swirls, meniscus rims, runs/drips are common.

Field identification cues

- Surface-catch class (MSRT)
- SC-2 across worked strokes (distinct interruption from etched micro-texture).
- SC-1 in feathered halos/thin film zones; SC-0 outside the affected area.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use a polymer stylus if a functional coating is suspected. MSRT supports classification only; do not abrade to “prove” relief.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Thin, feathered acid film forming pale stroke ghosts; SC-1-SC-2 intermittently; minimal standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clearly legible etched strokes visible at standard distance, SC-2 consistent; meniscus rings/runs evident. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Bold, over-worked fills or re-etched layers producing strong whitening legible at standard and wide-field; SC-2 throughout, possible local undercut/roughness.
- Reclassify when: If strokes are incised with chip-flank sparkle → V.01.02 scribed/engraved; if field is uniform granular matte with mask-sharp edges → V.01.01 abrasive-blast; if residue is amber/oily.

Distinguishing criteria

- vs. Scribed grooves (V.01.02): Scribing shows sharp grooves with chip flanks and directional incision; acid-tags show whitened modeled texture, swirls, runs, and soft stroke edges.
- vs. Abrasive-blast (V.01.01): Blast fields are uniform within masks and granular; acid-tags show application artifacts (cream swirls/runs) and variable whiteness.
- vs. Mineral etch (Ch.03.03): Mineral etch forms halo rings and non-graphic fields tied to wetting; acid-tags form intentional stroke geometry with tool/cream patterns.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of meniscus rims, swirl/brush patterns, run legs; overview of entire tag and context of public interface.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass through stroke body and halo; record SC-class (SC-2 body, SC-1 halo, SC-0.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-v-02-01-acid-marker-tagging-hf-bearing/

DSS-V.02.02 | Vandalism

Etch-Cream Patterning (Consumer Etchant Traces)

Intentional chemical etch - store-bought glass/ceramic etch creams and gels; patchy white/milky fields, brush/dauber swirls, pooled meniscus rims; typically SC-2 within worked areas, SC-1 in feathered halos; depth varies with dwell/reapplication

Diagnosis summary

Etch-cream patterning is an appearance change created by consumer or contractor-grade etching creams/gels (commonly fluorides/acidic bases intended for glass/ceramics). Application by brush, dauber, sponge, or finger yields patchy white/milky micro-texture with tool-mark swirls, pooling at edges, and drip legs if over-applied.

Field identification cues

- Surface-catch class (MSRT)
- SC-2 across worked micro-textured fields (distinct interruption).
- SC-1 in feathered halos/thin film; SC-0 outside the treated area.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only; do not abrade to “prove” relief.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Thin cream haze with SC-1-SC-2 intermittent, faint swirls, limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Clearly legible etched panels/bands visible at standard distance; SC-2 consistent; swirl/meniscus artifacts evident. Indicative relief: ~40-120 µm.
- CAT-4 (Severe): Dense, re-worked fills with strong whitening, multiple passes, runs/pools; visible at standard and wide-field; SC-2 throughout.
- Reclassify when: Sharp grooves with chip-flank sparkle → V.01.02 scribed; uniform mask-bounded granular frost → V.01.01 abrasive blast; white/grey ringed halos from water chemistry → Ch.03 mineral system.

Distinguishing criteria

- vs. Acid-marker tagging (V.02.01): Markers form stroke geometry with run legs; creams form area fills/panels with brush/dauber swirls and meniscus pooling.
- vs. Abrasive blast (V.01.01): Blast is uniform within masks, granular to touch; creams are modeled/mottled, show swirls and variable opacity.
- vs. Mineral etch (Ch.03.03): Mineral etch follows wetting/drip geometry with crystalline rings; cream fields have application geometry and tool marks.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros highlighting swirls, meniscus rims, density variation; overview of full treated area.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass within field and outside; record SC-class (SC-2 field, SC-1 feather, SC-0.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-v-02-02-etch-cream-patterning-consumer-etchant-traces/

DSS-V.03.01 | Vandalism

Spray Paint / Marker Coatings

Intentional applied coatings - paint/ink films deposited on glass; opaque/semi-opaque color fields, drips, feathered overspray, felt-tip stroke geometry; typically SC-0 for film-on-top, localized SC-1 only where prior abrasive attempts introduced shallow micro-texture; reclassify to chemical/mechanical families if substrate alteration persists after true film lift

Diagnosis summary

Spray paint / marker coatings are appearance changes caused by deliberate application of paints or inks (aerosol lacquer/acrylic/alkyd, enamel, permanent markers, paint pens) onto the glass surface, producing opaque or semi-opaque films, stenciled fills, or freehand tags. The applied medium sits atop the glass and, absent prior abrasive attempts, does not alter the substrate.

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for intact film-on-top (paint/ink is exogenous).
- SC-1 only where a prior abrasive attempt created very shallow substrate micro-texture beneath residual film edges. SC-2 implies misclassification-consider V.01.02 scribed or V.02 acid-etch.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only; do not abrade to “prove” relief.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a true film-lift test on a contained patch (without abrading substrate). Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin paint/ink film or overspray legible mainly at angle/raking; SC-0; film lifts on test patch leaving no shadow. Indicative relief: 0-10 µm (optical film only).
- CAT-2 (Light): Heavier film with minor drip/overlap thickness; SC-0 (substrate unaltered). If a faint post-lift tone remains from prolonged dwell of solvent-rich inks, record SC-0/SC-1 localized.
- CAT-3 (Moderate): Opaque painted panels/tags readily visible at standard distance, with drips/sags and overspray halos; substrate still SC-0 after lift. Indicative relief: ~40-120 µm (film stack).
- Reclassify when: After true film lift, if modeled matte persists (SC-1/2) → assess V.02 (acid-etch) or M.02 (abrasion); if chip-flank sparkle present → V.01.02 scribed; if uniform granular frost within.

Distinguishing criteria

- vs. Acid-marker (V.02.01) / etch-cream (V.02.02): Those leave substrate micro-texture (SC-2) with whitened etched appearance, runs/cream swirls.
- vs. Scribed grooves (V.01.02): Scribing shows sharp grooves, chip flanks, SC-2; paint shows meniscus edges, drips, no groove.
- vs. Coating anomalies (Co family): Coating issues are planar, on designated coated faces, and do not present overspray drifts/drips; paint/marker shows application geometry.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of overspray, drips/sags, stroke edges; overviews showing extent and access context.
- MSRT result (substrate): After a small true film-lift test patch (no abrasion), perform one light, non-marring pass on substrate and adjacent control; record SC-class (SC-0.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-v-03-01-spray-paint-marker-coatings/

DSS-V.03.02 | Vandalism

Sticker / Poster Adhesive Campaigns (Mass Adhesive Residue)

Intentional applied materials - large-area paper/vinyl labels, posters, and campaign stickers; residual adhesive films, paper fiber ghosts, grid liner prints; typically SC-0 for intact film-on-top, localized SC-1 where prior scraping introduced very shallow micro-texture; reclassify if substrate alteration persists after true residue lift

Diagnosis summary

Sticker/poster adhesive campaigns are appearance changes from affixed labels, posters, and vinyls applied to glass, leaving adhesive films, paper fiber ghosts, and outline “shadows.” Multi-layer campaigns may build heterogeneous films with edge dirt rims. The materials are exogenous; absent abrasive attempts, the substrate remains unaltered. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 for film-on-top adhesive and paper fibers.
- SC-1 localized only where prior scraping or entrained grit produced very shallow micro-texture; SC-2 indicates misclassification-consider M.01.01 scraper scoring or M.02 abrasion fields if grooves/swirl remain.
- Perform one light, non-marring pass on a small revealed test patch (substrate). Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a true residue-lift test on a contained patch (without abrading substrate). Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin adhesive film/fiber ghosts legible mainly at angle/raking; SC-0; lifts clean on test patch leaving no shadow. Indicative relief: 0-10 µm (optical film only).
- CAT-2 (Light): Heavier, aged adhesive with paper fiber loading and edge dirt rims; SC-0 with localized SC-1 where prior scraping/grit affected substrate; limited standard-view impact.
- CAT-3 (Moderate): Large multi-layer campaign fields readily visible at standard distance as matte veils/patchwork; substrate generally SC-0 after proper lift; note SC-1 localized if prior abrasive.
- Reclassify when: After true residue lift, if linear grooves with chip-flank sparkle remain → M.01.01 scraper scoring; if modeled matte/swirl remains → M.02 abrasion fields; if oily transparent film.

Distinguishing criteria

- vs. Paint/marker coatings (V.03.01): Paint shows color opacity, overspray, drips; sticker campaigns show clear/whitish adhesive film, paper fibers, silhouette outlines.
- vs. Acid/cream etch (V.02): Etch presents whitened substrate micro-texture (SC-2) with swirls/runs; adhesive residue is film-on-top (SC-0) and lifts with proper reveal.
- vs. Surfactant/detergent film (R.04.01): Surfactant films show iridescent wipe trails; adhesive shows tacky, fiber-loaded mats, silhouette edges.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of fiber-laden zones, edge dirt rims, silhouette corners, liner grid ghosts; overviews showing extent and.
- MSRT result (substrate): After a small true residue-lift test patch (no abrasion), perform one light, non-marring pass on substrate and adjacent control; record SC-class.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating present on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-v-03-02-sticker-poster-adhesive-campaigns-mass-adhesive-residue/

DSS-U.01.01 | Uncertain / Mixed Mechanisms

Mixed Chemical-Mechanical Field (Etch + Track / Hybrid Presentation)

Mixed mechanism - overlapping chemical alteration and mechanical abrasion/scoring; modeled micro-texture with superposed linear tracks or scuffs; halos/runs from chemistry plus chip-flank sparkle in lines; SC-1 across etched field with SC-2 along mechanical strokes

Diagnosis summary

Mixed chemical-mechanical field is an appearance change on glass where chemical alteration (acid/alkali/mineral etch or residue-induced micro-texture) coexists with and/or is overlain by mechanical actions (scraper/razor, pad swirls, directional scuffs, or line scoring). The result is a hybrid field in which modeled matte or haloed zones intermix with linear tracks having chip-flank features.

Field identification cues

- Surface-catch class (MSRT)
- SC-1 broadly within the chemically altered field (incipient micro-texture).
- SC-2 along mechanical lines/tracks (distinct interruption with chip-flank feel).
- Perform one light, non-marring pass on a small revealed test patch-sample both the matte field and the linear features. Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Small hybrid zone where field shows SC-1 (subtle matte) and lines are faint SC-1-SC-2, with limited standard-view impact. Indicative relief: ~10-40 µm (field) with ~20-60 µm (lines).
- CAT-3 (Moderate): Pane-noticeable hybrid: field matte legible at standard distance (SC-1) with multiple SC-2 tracks (chip flanks evident). Indicative relief: ~40-120 µm (field) plus ~60-150 µm (lines).
- CAT-4 (Severe): Wide-area chemical matte combined with dense/Deep mechanical scoring visible at standard and wide-field; SC-2 prevalent along lines.
- Reclassify components when dominant:

Distinguishing criteria

- vs. Pure mineral system (Ch.03): Mineral alone presents ringed halos/etch without chip-flank lines. Mixed fields show both haloed matte and sparkling line edges.
- vs. Pure abrasion fields (M.02): Abrasion swirls/webs lack chemical run/meniscus artifacts and typically exhibit uniform directionality.
- vs. Coating anomalies (Co): Coating patchiness is planar on coated faces and lacks mechanical chip flanks; mixed fields reveal distinct line relief.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros that distinctly show (a) field matte / halos / runs and (b) chip-flank sparkle of lines; overlays or paired.
- MSRT results (substrate): After a small reveal test patch, perform one light, non-marring pass through field (record SC-1) and line (record SC-2), plus adjacent control.
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-u-01-01-mixed-chemicalmechanical-field-etch-track-hybrid-presentation/

DSS-U.01.02 | Uncertain / Mixed Mechanisms

Modeled Micro-Texture with Embedded Particulates (Uncertain Chemistry)

Mixed/unknown mechanism - low-contrast matte with fine embedded or partially embedded specks; may result from chemical softening plus particulate impingement/setting; SC-1 broadly in field, isolated SC-2 at raised particulates or micro-divots

Diagnosis summary

Modeled micro-texture with embedded particulates is an appearance change in which a subtle, non-directional matte field is accompanied by discrete specks that appear embedded or partially seated in the surface. The presentation suggests chemical softening/attack (acidic, alkaline, or mineral) combined with particle deposition/impingement, but the exact chemistry is uncertain.

Field identification cues

- Surface-catch class (MSRT)
- SC-1 across the modeled field (incipient micro-texture).
- SC-2 (pin-point) at individual raised particulates or micro-divots where a stylus crosses a protrusion or craterlet.
- Perform one light, non-marring pass on a small revealed test patch, sampling (a) clean glass control, (b) field matrix, and (c) several specks. Use a polymer stylus if a functional coating is suspected.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Small patch; SC-1 matrix with sparse specks (few per 100 cm2); limited standard-view impact. Indicative relief: field ~10-40 µm, speck high/low points ~20-60 µm.
- CAT-3 (Moderate): Pane-noticeable patch/panel; SC-1 matrix with numerous specks (tens per 100 cm2) legible at standard distance. Indicative relief: field ~40-120 µm, specks ~60-150 µm.
- CAT-4 (Severe): Wide-area field with dense peppering visible at standard and wide-field views; frequent SC-2 pin-points; occasional micro-divots.
- Reclassify when (component rules):

Distinguishing criteria

- vs.
- vs. Dust-storm micro-pitting (E.02.02): Eolian pitting is directionally biased (wind-ward) and frequently gradient-based; U.01.02 lacks strong directionality and pairs with modeled matte.
- vs. Mineral etch (Ch.03.03): Mineral etch displays ring/flow halos; U.01.02 specks are random, with no consistent drip/run geometry.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros isolating field matte and multiple specks (include one with apparent micro-divot); overview frames showing.
- MSRT results: After a small reveal test patch, record SC-class for control (SC-0), field matrix (SC-1), and specks (SC-2 where present).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-u-01-02-modeled-micro-texture-with-embedded-particulates-uncertain-chemistry/

DSS-U.01.03 | Uncertain / Mixed Mechanisms

Halo without Central Feature (Unknown Chemistry)

Unknown mechanism - annular rings/ovals with no obvious central nucleus; evaporative/deposition rim remains while core is visually clear; typically SC-0 at core and SC-0-SC-1 on rim; reclassify to mineral/surfactant/sealant families if diagnostic cues present

Diagnosis summary

Halo without central feature is an appearance change presenting as a ring or oval band whose center is not visibly occupied by residue or defect. The annulus is presumed to result from edge-biased deposition during wetting/evaporation, surfactant Marangoni flow, or migration from adjacent materials, but the controlling chemistry is not yet identified. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- Core: generally SC-0 (no relief).
- Rim: SC-0 if purely film; SC-1 where very shallow micro-texture or fine crystalloid is present; SC-2 implies misclassification-evaluate for mineral etch (Ch.03.03) or hot particle craters if present.
- Perform one light, non-marring pass across core → rim → outside on a small revealed test patch. Use polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Faint annular halo; SC-0 rim, SC-0 core; visible mainly in raking/angle; lifts on reveal patch. Indicative relief: 0-10 µm (film only).
- CAT-2 (Light): Persistent rim post-reveal with localized SC-1 (incipient micro-texture or very fine crystalloid); minimal standard-view impact. Indicative relief: ~10-40 µm at rim.
- CAT-3 (Moderate): Multiple rings/panels legible at standard distance; SC-1 consistent around rims; suggests recurrent cycles or additive-laden droplets. Indicative relief: ~40-120 µm at rim.
- Reclassify when (diagnostic cues present):

Distinguishing criteria

- vs. Mineral spot/etch rings (Ch.03): Mineral rings often show crystalline texture and may leave true etch (SC-1→SC-2) after reveal; U.01.03 halos can be film-only (SC-0) with no inner etch.
- vs. Surfactant islands (R.04.01): Surfactant halos show thin-film colors and align with wipe paths; U.01.03 rings are isolated droplet-like without path context.
- vs.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of rim segment and core; include mist/wetting test frame to show wetting response across rim vs.
- MSRT results: After a small reveal test patch, record SC-class at core (SC-0), rim (SC-0/SC-1), and outside control (SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-u-01-03-halo-without-central-feature-unknown-chemistry/

DSS-U.01.04 | Uncertain / Mixed Mechanisms

Directional Patterning with Intermittent Chip Flanks (Uncertain Tool/Pad)

Unknown/mixed mechanism - directional lines/arcs with periodic edge sparkle and variable relief; suggests intermittent hard-point contact within an otherwise pad/cloth motion; SC-1 along most paths with localized SC-2 “spikes” at higher-pressure segments or entrained particulates

Diagnosis summary

Directional patterning with intermittent chip flanks is an appearance change characterized by linear or arced paths (often repeating in lanes or sweeps) where most of the path reads as shallow abrasion (SC-1) but localized segments exhibit chip-flank sparkle (SC-2) indicative of momentary hard-point contact (entrained grit, damaged pad edge, nicked squeegee, or tool corner).

Field identification cues

- Surface-catch class (MSRT)
- Predominantly SC-1 along the abrasion path (shallow micro-texture).
- SC-2 at intermittent sparkle points where a hard particle/edge dug briefly (micro-chipping visible under raking).
- Perform one light, non-marring pass on a small revealed test patch crossing (a) matte path and (b) sparkle nodes; record both responses. Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT. Depth values are indicative-field measurement not required.
- CAT-2 (Light): Few lanes; nodes infrequent; SC-1 predominant with rare SC-2 pin-points; minimal standard-view impact. Indicative relief: path ~10-40 µm; nodes ~20-60 µm.
- CAT-3 (Moderate): Multiple lanes or dense arcs legible at standard distance; regular SC-2 nodes at overlaps/apexes. Indicative relief: path ~40-120 µm; nodes ~60-150 µm.
- CAT-4 (Severe): Wide-area patterning across panels, frequent SC-2 nodes, occasional short incised segments; pane appearance compromised at standard and wide-field views.
- Reclassify when (dominance clarifies mechanism):

Distinguishing criteria

- vs. M.02 Abrasion fields: M.02 shows broad directional haze or swirl webs with consistent SC-1 and lacks discrete SC-2 nodes.
- vs. M.01 Scoring: Scoring yields continuous sharp grooves with chip flanks along most of the line, not intermittent.
- vs. V.01.02 Scribed marks: Scribing forms intentional letters/icons with consistent groove relief; U.01.04 shows maintenance-like paths and pressure-dependent nodes.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros capturing (a) matte path and (b) sparkle node; overview frames to show lane spacing/rhythm.
- MSRT results: After a small reveal test patch, record SC-class along path (SC-1), at node (SC-2), and outside control (SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-u-01-04-directional-patterning-with-intermittent-chip-flanks-uncertain-tool-pad/

DSS-U.01.05 | Uncertain / Mixed Mechanisms

Non-Directional Milky Field, Low Contrast (Undetermined)

Unknown mechanism - broad low-contrast haze without obvious directionality, rings, runs, or discrete particulates; may reflect weathering, aged films, or incipient micro-texture; typically SC-0 to SC-1 across the field

Diagnosis summary

Non-directional milky field (low contrast) is an appearance change characterized by a broad, subtle, “milky” veil over part or all of a lite without clear directional patterning, annular halos, runs/drips, or discrete peppering/pits. Possible contributors include aged organic films, very early environmental weathering, soft chemical exposure short of distinct etch, or legacy maintenance residues.

Field identification cues

- Surface-catch class (MSRT)
- Frequently SC-0 (film-on-top or purely optical veil).
- SC-1 where incipient micro-texture is present (very shallow relief detectable only by careful pass).
- Perform one light, non-marring pass on a small revealed test patch within the field and on adjacent clear control. Use a polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a reveal patch. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Subtle veil visible mainly at oblique/raking; SC-0; clears on reveal patch or reduces markedly. Indicative relief: 0-10 µm (optical/film only).
- CAT-2 (Light): Persistent low-contrast milkiness post-reveal with localized SC-1; limited impact at standard distance. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Pane-noticeable haze at standard distance, SC-1 consistent across field; indicates dwell/aging or incipient micro-texture. Indicative relief: ~40-120 µm.
- Reclassify when (diagnostic cues emerge):

Distinguishing criteria

- vs. Surfactant/detergent film (R.04.01): Surfactant films often show iridescent colors and wipe path geometry; U.01.05 lacks pathing and may respond weakly to reveal.
- vs. Atmospheric matte (E.01.02): Atmospheric matte may bias to edges/rivulets; U.01.05 often appears mid-field with soft boundaries.
- vs. Coating anomalies (Co): Coating issues are face-specific and planar; confirm face identity and look for lot-wide repetition.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros to demonstrate absence of lines/rings/pits; a wetting response frame (where permitted) to show sheet/bead.
- MSRT results: After a small reveal test patch, record SC-class for field (SC-0/SC-1) and adjacent control (SC-0).
- Forms: Pane ID; product family & surface numbering; worked surface Y/N; functional coating on worked surface?

Safety / repairability boundary: Complete only the non-invasive reveal and inspection steps authorized by the controlling VIS guidance. Classification does not authorize restoration, establish acceptance, or override stop-work, coating, crack, integrity, access, chemical, fall-protection, or project-specific requirements.

Full DSS publication: use the catalog download. Web specification:
https://a7df714357.nxcli.io/learning-center/resource-center/damage-specification-standards/dss-u-01-05-non-directional-milky-field-low-contrast-undetermined/