

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/>