

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/>