

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/>