

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/>