

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 $\mu\text{m}+$.

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/>