

DSS-Th.01.02 | Thermal / Hot Particle / Fusion & Thermal Stress

Grinder Spark Embed (ferrous peppering)

Thermal / hot-particle impingement - fine ferrous particles embedded and/or pitting

Diagnosis summary

Grinder spark embed presents as a fine “peppered” field of ferrous particles ejected from metal grinding/cutting that impact, fuse, and/or oxidize on the glass. Some particles remain proud/fused; others detach leaving micro-pits. Classification is appearance-only per VIS; methodology is out of scope. Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- On retained specks and micro-pits, a single, light, non-marring pass typically yields SC-1 (slight) to SC-2 (clear) on representative features. Do not abrade; one pass only. Use a polymer stylus if a coating is suspected.
- Visual signature
- High-density field of minute, discrete points; many with tiny bright pit rims in raking light; lacks long continuous tracks of linear scoring.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Depth bands below are indicative only-numeric measurement not required for field classification.
- CAT-2 (Light): Sparse to light peppering, mostly SC-1 on select points; visible mainly at raking and close/standard view; limited field impact.
- CAT-3 (Moderate): Noticeable cluster fields with frequent SC-2 micro-pits and bright rims; clearly visible at standard distance; occasional retained specks. Indicative pit depth: ~40-120 µm.
- CAT-4 (Severe): Dense, widespread peppering; many clear-catch pits and intermittent fused nodules; readily apparent at standard and wide-field views. Indicative pit depth: ~120-300 µm+.
- CAT-5 (by location/condition): Between-pane cues, active cracks/pane instability, or confirmed functional-coating loss on the surface to be worked → CAT-5 (non-repairable/out of in-place scope).

Distinguishing criteria

- vs. Welding slag spatter (Th.01.01): Slag fields tend to include larger fused nodules and rougher craters; grinder pepper is finer, more uniform and more “dust-like.”
- vs. Linear scoring (M.01): Scoring forms continuous lines with abrasive chip-flank sparkle; peppering is discrete points without run-length.
- vs. Sand abrasion (E.02.01): Eolian abrasion appears as directional matte fields (non-discrete) and may show modeled micro-texture rather than discrete pits.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in; normal + oblique; include raking macros that resolve pit rims/retained specks and at least one context frame showing proximity to grinding.
- MSRT result: One light, non-marring pass on a representative spot; record SC class (SC-1/SC-2 as observed). 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-th-01-02-grinder-spark-embed/>