

DSS-Th.01.03 | Thermal / Hot Particle / Fusion & Thermal Stress

Oxy-Fuel / Plasma Specking

Thermal / hot-particle impingement - oxidized micro-spatter and crater specks

Diagnosis summary

Oxy-fuel/plasma specking presents as fine to mixed-size hot-particle spatter from flame-cutting or plasma-cutting operations that impact and partially fuse to the glass, often oxidizing (dark/brown/blue tones) and/or detaching to leave micro-craters. Classification is appearance-only per VIS (method-agnostic). Inspect under VIS lighting/geometry after Non-Invasive Reveal;

Field identification cues

- Surface-catch class (MSRT)
- Retained specks and micro-craters typically read SC-1 (slight) to SC-2 (clear) on a single, light, non-marring pass. Do not abrade; use a polymer stylus if a coating is suspected. MSRT supports classification, not acceptance.
- Visual signature
- Discrete, non-linear peppering with oxidized color notes on retained particles; micro-craters with bright, rough rims where detachments occurred.

Classification, severity and scope

- Assign CAT by appearance + MSRT + morphology (three-part cueing). Numeric depth ranges are indicative-measurement is not required for classification.
- CAT-2 (Light): Sparse/light peppering; mostly SC-1; visible primarily in raking at close/standard view. Indicative pit depth: ~20-60 µm; typical pit dia. ≤~0.3 mm.
- CAT-3 (Moderate): Noticeable clusters/fields with frequent SC-2 micro-craters and occasional retained, oxidized specks; clearly visible at standard distance. Indicative pit depth: ~60-150 µm.
- CAT-4 (Severe): Dense peppering, numerous clear-catch craters and intermittent fused nodules; readily apparent at standard & wide-field views. Indicative pit depth: ~150-400 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. Welding slag spatter (Th.01.01): Slag often shows larger, irregular fused nodules; oxy-fuel/plasma specking trends finer with oxidation colors more evident on retained particles.
- vs. Grinder pepper (Th.01.02): Grinder fields are typically very fine and uniform, with fewer color tones; oxy-fuel/plasma can show a wider particle size spread and oxidized hues.
- vs. Linear scoring (M.01): Scores are continuous lines; specking is discrete points without run-length.

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 the.
- 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-01-03-oxy-fuel-plasma-specking/>