

DSS-Co.03.02 | Coating Anomalies

Hard-Coat Micro-Mottle (Other Functional Films)

Thin/"hard" functional films other than low-E-e.g., AR hybrids, IR-control, solar-control, anti-glare-showing fine planar mottle/texture in the coating; non-directional, patchy reflectance or color micro-variation; typically SC-0, rarely SC-1 where minute imprint exists; confirm coated face before attribution

Diagnosis summary

Hard-coat micro-mottle is an appearance change confined to functional hard films (non-pyrolytic low-E alternatives, AR/IR hybrids, solar/anti-glare coatings) presenting as fine, non-directional mottle-a subtle patchwork of reflectance or color within the coated area. The effect is planar within the coating and usually non-tactile. Classification is appearance-only per VIS (method-agnostic).

Field identification cues

- Surface-catch class (MSRT)
- SC-0 typical (planar optical variation).
- SC-1 localized only if a minute contact imprint (pad weave/foreign dust) coincides with mottled zone.
- Perform one light, non-marring pass on a small revealed test patch; polymer stylus only on suspected coated faces. MSRT supports classification only; do not abrade the coating.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT.
- CAT-1 (Benign / non-relief): Very faint mottle legible mainly at oblique/raking; SC-0. Indicative relief: 0-10 µm (optical only).
- CAT-2 (Light): Discernible micro-mottle at standard distance in certain lighting; SC-0 (or SC-1 localized if micro-imprint). Indicative relief: ~10-40 µm (apparent optical).
- CAT-3 (Moderate): Pane-noticeable mottled panel at standard distance, affecting uniformity; SC-0/SC-1. Indicative relief: ~40-120 µm (apparent optical).
- Reclassify when: Parallel periodic bands → Co.02.01 Roller pickup; wipe-arc-linked → Co.02.02 Rub/Scuff (pyrolytic) or Co.03.01 AR bloom; linear grooves with chip flanks → M.01 Scoring; rings/runs →.

Distinguishing criteria

- vs. AR bloom/scuff (Co.03.01): AR bloom often shows distinct reflectivity increase with contact context; Co.03.02 is a fine, non-directional mottle that may be process-intrinsic.
- vs. Pyrolytic rub/scuff (Co.02.02): Pyrolytic rubs are localized wipe/contact panels; Co.03.02 lacks wipe geometry and can appear lot-distributed.
- vs. Mineral/chemical films (Ch family): Chemistry shows rings/runs and may yield SC-1/2; Co.03.02 is planar, ringless, typically SC-0.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros across mottle boundary; broad specular comparison (inside vs. outside zone). Record distance/angle in-frame.
- Face ID + MSRT. Confirm functional coated face; MSRT (polymer stylus only) on a revealed patch to record SC-class (SC-0 typical; SC-1 localized if present).
- Context notes. Lot repetition (intrinsic) vs. isolated (handling/cleaning); cleaners/media used; storage/stacking history.

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-co-03-02-hard-coat-micro-mottle-other-functional-films/>