

DSS-R.03.01 | Residue / Film / Adhesion

Suction Cup Rings (residue / pressure mark)

Residue/film / pressure artifact - lifting cup contact; circular/oval rings, center pucks, tri-lobe clusters; typically SC-0, SC-1 if aged film or slight micro-texture

Diagnosis summary

Suction cup rings are appearance changes on glass caused by vacuum lifter cups or manual suction tools during fabrication, transport, or install. They present as circular/oval rings, center pucks, or tri-/quad-lobe clusters reflecting multi-pad frames. Artifacts include transfer films (plasticizer, rubber, dust-print), pressure marks, or moisture halos; heavy dwell/heat can leave persistent veils.

Field identification cues

- Surface-catch class (MSRT)
- Typically SC-0 (film/pressure-only).
- SC-1 may appear where aged plasticizer or heat dwell induced slight micro-texture or converted film; SC-2 is uncommon-recheck classification if present.
- Perform one light, non-marring pass on a small revealed test patch (substrate), not over gummy islands. Polymer stylus if a functional coating is suspected. MSRT supports classification only.

Classification, severity and scope

- Assign CAT by visibility at acceptance geometry and MSRT after a controlled reveal on a small area. Depth values are indicative-field measurement not required.
- CAT-1 (Benign / non-relief): Thin ring/veil; SC-0 after reveal; primarily angle/raking visible. Indicative relief: 0-10 µm (optical).
- CAT-2 (Light): Persistent circular veil with wetting contrast or slight SC-1 (aged plasticizer/heat dwell); limited standard-view impact. Indicative relief: ~10-40 µm.
- CAT-3 (Moderate): Multiple rings/arrays legible at standard distance (visual clutter), with patchy SC-1 in ring lips; suggests extensive handling exposure. Indicative relief: ~40-120 µm.
- Reclassify when: After true residue lift, any modeled micro-texture or SC>0 persists on substrate → consider Ch.06.02 hydrophobic coating mismatch halo or Ch.04.03 alkaline/degreaser burn if strong.

Distinguishing criteria

- vs. Adhesive label/sticker ghost (R.01.05): Labels are smaller with die-cut corners; cup rings are larger round/oval with lip + puck geometry or multi-pad arrays.
- vs. Hydrophobic mismatch halo (Ch.06.02): Mismatch edges are irregular and field-wide; cup rings are precise circles matching pad size.
- vs. Silicone smear (R.01.01): Silicone tracks joints and shows corduroy; cup rings are isolated circles with wetting contrast.

Documentation and inspection

- Photo set (VIS): 12 / 36 / 72 in, normal + oblique; raking macros of ring lip, puck, wipe overlaps; context frames showing vacuum equipment or handling setup.
- MSRT result (substrate): After a small reveal test patch, perform one light, non-marring pass; record SC-class (SC-0/SC-1/SC-2).
- 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-r-03-01-suction-cup-rings-residue-pressure-mark/>