

Glass Insert Silicone Bead Uniformity Verification

1.0 Objective & Quality Standard

The objective of this procedure is to ensure that the silicone bead applied around glass inserts in cabinet doors is uniform in width, height, and continuity. A consistent bead prevents water ingress, secures the glass, and provides a clean aesthetic. The acceptable tolerance for bead width is 3.0mm $\pm$ 0.5mm, and bead height is 2.0mm $\pm$ 0.5mm. No gaps, voids, or excess silicone beyond the specified tolerance are permitted.

2.0 Required Tools & Gauges

- Digital Caliper (0-150mm range, 0.01mm resolution)
- Silicone Bead Profile Gauge (custom jig with 3.0mm $\pm$ 0.5mm slot)
- Feeler Gauge Set (0.5mm to 1.0mm for height verification)
- White Lint-Free Cloth (for cleaning inspection area)
- Inspection Light (LED, 5000K color temperature)
- ShopDocs QA Checklist (digital or printed)

3.0 Safety & Material Handling

- Wear clean, non-abrasive gloves (nitrile or cotton) to avoid contaminating the silicone or glass surface.
- Handle glass inserts with both hands, supporting the edges to prevent breakage or stress on the silicone bond.
- Ensure the work surface is clean, dry, and free of debris to avoid scratching the glass or damaging the bead.
- If silicone fumes are present, ensure adequate ventilation in the inspection area.

4.0 Step-by-Step Procedure

1. Place the cabinet door with glass insert on a clean, level inspection table with the silicone bead facing upward.
2. Visually inspect the entire silicone bead perimeter for obvious gaps, voids, or excess silicone using the inspection light at a 45-degree angle.
3. Select a representative section of the bead (at least 100mm long) on each of the four sides of the glass insert for measurement.
4. Using the digital caliper, measure the bead width at three points along each selected section: near the start, middle, and end. Record each measurement.
5. Insert the silicone bead profile gauge over the bead at each measurement point. The gauge should slide over the bead with light resistance; if it binds or has excessive play, the bead is out of tolerance.
6. Using the feeler gauge set, check bead height by inserting the 1.5mm gauge between the glass and the top of the bead. The gauge should not pass freely; if it does, the bead is too low. Repeat with the 2.5mm gauge; it should not fit under the bead.

7. Inspect the bead continuity by running a clean finger (with glove) along the bead path. Any sharp edges, dips, or discontinuities indicate a defect.
8. Verify that the silicone bead is fully cured (if applicable) by pressing lightly with a clean tool; no deformation should occur.
9. Document all measurements and observations on the ShopDocs QA Checklist, noting any deviations from the standard.
10. If the bead passes all checks, mark the door as approved and move to the next assembly step. If any defect is found, proceed to Section 5.0.

5.0 Verification & Defect Reporting

1. If the bead width exceeds 3.5mm or is less than 2.5mm, or if the height is outside 1.5mm to 2.5mm, flag the unit as non-conforming.
2. Apply a red tag to the door with the defect description, date, and inspector initials. Move the door to the rework area.
3. For minor excess silicone (width up to 4.0mm), carefully trim the bead with a sharp, clean blade and re-inspect per steps 4.4 to 4.9.
4. For gaps, voids, or low height, remove the entire bead using a silicone removal tool, clean the surface with isopropyl alcohol, and reapply silicone per the standard work instruction.
5. Log all out-of-tolerance defects in the ShopDocs QA module for root cause analysis. Include photos of the defect and the measurement data.
6. If three or more units from the same batch fail inspection, notify the production supervisor and initiate a process audit to identify the root cause (e.g., nozzle wear, pressure variation, operator technique).

Regulatory Disclaimer: This document is a generic quality assurance template. The end-user assumes all liability for validating all dimensional tolerances, testing procedures, and engineering specifications against actual production requirements before deployment.