Mirror Door Safety Film Inspection

1.0 Objective & Quality Standard

The objective of this procedure is to ensure that safety film applied to mirror doors is free of defects such as bubbles, wrinkles, edge lifting, and scratches that could compromise adhesion or safety. The acceptable quality standard requires 100% film coverage with no visible defects within the viewing area, and edge adhesion must withstand a 90-degree peel test with no delamination beyond 2mm from the edge.

2.0 Required Tools & Gauges

- Inspection light (LED or fluorescent, 5000K color temperature)
- Magnifying glass (10x magnification)
- Feeler gauge set (0.1mm to 1.0mm)
- Digital caliper (0-150mm range, 0.01mm resolution)
- Adhesion test tape (3M 610 or equivalent)
- Clean lint-free microfiber cloth
- Inspection checklist form (ShopDocs QA module)

3.0 Safety & Material Handling

- Wear clean, non-abrasive gloves (nitrile or cotton) to prevent fingerprints and oil transfer on mirror surface.
- Handle mirror doors with two hands and use edge protectors to avoid chipping or cracking.
- Place mirror doors on a padded, non-marring inspection table with adequate lighting.
- Ensure the work area is free of dust and debris that could scratch the film during inspection.

4.0 Step-by-Step Procedure

1. Verify the mirror door is clean and free of dust, smudges, or loose particles by wiping gently with a lint-free microfiber cloth.
2. Position the inspection light at a 45-degree angle approximately 300mm from the mirror surface to highlight film defects.
3. Visually scan the entire mirror surface for bubbles, wrinkles, or creases. Mark any defect larger than 1mm in diameter with a removable sticker.
4. Using the magnifying glass, inspect all four edges of the film for lifting or delamination. Measure any gap between film and glass using the feeler gauge; reject if gap exceeds 0.2mm.
5. Check for scratches or abrasions on the film by reflecting the inspection light off the surface. Any scratch longer than 10mm or deeper than 0.05mm (measured with caliper) is a defect.
6. Perform an adhesion test at one corner: apply a 75mm strip of adhesion test tape firmly over the film edge, press down, then pull back at a 90-degree angle. The film must not lift more than 2mm from the glass.

7. Inspect the film for any foreign particles (dust, hair, fibers) trapped beneath the surface. Any particle larger than 0.5mm visible within the viewing area is a defect.

8. Verify that the film covers the entire mirror surface, including edges, with no exposed glass beyond the specified 1mm tolerance from the frame edge.

9. Record all inspection results on the ShopDocs QA checklist, including pass/fail status for each defect category.

10. If the mirror door passes all criteria, affix a green QA sticker to the top edge and move to packaging. If it fails, red-tag the unit and proceed to rework.

5.0 Verification & Defect Reporting

1. After completing the inspection, a second QA technician must verify the results for a random 10% sample of passed units to ensure consistency.

2. For any failed unit, complete a Defect Report in the ShopDocs QA module detailing the defect type, location, and measurements.

3. Red-tag the mirror door with a clearly visible red sticker and move it to the designated rework area. Do not proceed to packaging.

4. Rework options: For minor bubbles or lifting, reapply film using a heat gun and squeegee. For scratches or trapped particles, strip and replace the film entirely.

5. After rework, repeat the full inspection procedure. If the unit fails again, scrap it and document the root cause in the quality log.

6. Escalate recurring defects (more than 3 in a shift) to the Production Supervisor for process adjustment and root cause analysis.