

Dado Width Vs Panel Thickness Test

1.0 Objective & Quality Standard

The objective of this procedure is to verify that the width of every dado cut matches the actual thickness of the mating panel within a tolerance of $\pm 0.2\text{mm}$. A properly sized dado ensures a tight, glue-ready joint that eliminates gaps, prevents racking, and maintains structural integrity of the assembled unit.

The quality standard requires that the panel slides into the dado with light hand pressure only. No hammer or mallet force is permitted. The panel must not rattle or shift laterally once seated. Any deviation beyond $\pm 0.2\text{mm}$ is considered a defect and must be flagged for corrective action.

2.0 Required Tools & Gauges

- Digital Caliper (0-150mm range, resolution 0.01mm)
- Feeler Gauge Set (metric, 0.05mm to 1.00mm)
- Go/No-Go Dado Gauge (optional, pre-set to nominal panel thickness $+0.2\text{mm}$)
- Panel Thickness Gauge or Micrometer (for verifying panel thickness)
- Marking Pencil (fine tip, for identifying out-of-tolerance locations)
- Inspection Log Sheet or ShopDocs QA Module (for recording measurements)

3.0 Safety & Material Handling

- Wear safety glasses to protect against dust and debris during measurement.
- Handle panels with clean, dry hands or non-marring gloves to prevent oil transfer.
- Place panels on a stable, flat inspection table to avoid flexing or damage.
- Do not force panels into dados; use only light hand pressure to test fit.

4.0 Step-by-Step Procedure

1. Select the panel that will mate with the dado and measure its thickness at three points along the edge that will enter the dado: left end, center, and right end. Record the average thickness on the inspection log.
2. Zero the digital caliper and measure the width of the dado at both ends and at the midpoint of the cut. Record each measurement to 0.01mm precision.
3. Calculate the difference between the average panel thickness and each dado width measurement. The difference must be between -0.2mm and $+0.2\text{mm}$.
4. If the dado is wider than the panel by more than 0.2mm, insert the appropriate feeler gauge into the gap alongside the panel. Record the feeler gauge thickness that fits snugly.
5. If the dado is narrower than the panel by more than 0.2mm, do not attempt to force the panel. Mark the location with a pencil and flag the part for rework.

6. Perform a dry fit test by inserting the panel into the dado using only light hand pressure. The panel should seat fully without binding and should not wobble side to side.
7. Remove the panel and inspect the dado for any signs of crushing, tear-out, or debris that could affect fit. Clean the dado with compressed air if necessary.
8. Repeat the measurement and fit test for every dado on the workpiece. Document all results in the ShopDocs QA module.

5.0 Verification & Defect Reporting

1. If the panel-to-dado gap exceeds +0.2mm, the joint is too loose. Red-tag the part and route it to the CNC operator for review. The operator must adjust the tooling offset and re-cut the dado on a test piece before production resumes.
2. If the panel cannot enter the dado due to a negative gap greater than -0.2mm, the dado is too tight. Red-tag the part and send it to the sanding or routing station for careful widening. Do not sand the panel thinner.
3. Log all out-of-tolerance measurements in the ShopDocs QA module with the exact location, measured values, and operator ID. Initiate a root cause analysis if more than 5% of parts in a batch fail.
4. If the dry fit test reveals lateral play or binding that is not captured by caliper measurements, escalate to the QA supervisor for a secondary inspection and potential tooling maintenance.

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.