



LAMINATED & TEMPERED GLASS Quality Assurance Program

The Vitro America manufacturing plant in Grenada, Mississippi, is the recipient of the Mississippi Quality “Excellence Award”, a recognition earned for demonstrating continuous performance excellence. It is a structured, externally validated, self-assessment process, utilizing the prestigious Malcolm Baldrige Award criteria.

The product quality assurance program involves strict adherence to all specifications and standards, including ASTM C1036-01, ASTM C1048-04, ASTM C1172-03, ANSI Z97-1984 and CPSC 16CFR 1201. Compliance is assured through product testing conducted internally and by supplier-partners and outside independent laboratories.

Tempered Glass – Prior to a production run, appropriate computerized recipes are selected for the glass type and thickness. A representative sample piece is run and tested: flatness is measured using a Roller-Wave Gauge, a tool that measures peak-to-valley depth of the roller wave (flatness is held to a .005” upper limit); break pattern is evaluated and the ten largest pieces are weighed ensuring adherence to the published standard; all testing is documented. During the production run, visual quality is inspected at the discharge of the furnace and distortion is evaluated utilizing two Zebra Boards. Furthermore, flatness is monitored throughout a production run using a flatness gauge by taking measurements across and down the length of the glass as well as along the edges ensuring flatness and negligible edge kink.

Laminated Glass – All product quality testing is post production and involves three components.

- Internal testing is completed once a week and involves a Bag Drop Impact Test, Pummel Adhesion Test and a Boil Test in accordance with ANSI Z97.1-1984. Results are documented and maintained on file.
- Supplier-partner evaluations are completed monthly and involve six production samples selected at random throughout the month sent to both Solutia® and DuPont®. Tests include the Pummel Adhesion Test, Boil Test and measurement of moisture content in the vinyl interlayer.



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- Independent laboratory testing is completed annually by Patzig Testing Laboratories using thin glass with both .030 and .015 interlayers and in accordance with ANSI Z26.1-1980. Tests ensure conformance to required criteria for: Light Stability; Luminous Transmittance, Humidity Tests, Boil Test, Impact Tests (Dart & Ball); Optical
- Deviation and Physical Distortion; Abrasion Resistance; Penetration Resistance. A total of 98 samples are tested for each interlayer type.

Vitro America (Grenada, MS.) has received ECE-R-43 certification from the United Kingdom Approval Authority for the manufacture of Safety Glazing on Motor Vehicles (approval # E11-43R-000481) sold in Europe. Samples are obtained by Vitro America, and tested by Carlex Glass Company for every production run of the certified product, which is on an as need basis.