

# Product Summary

## Ultra Mirrors – CopperFree



**Description** - Guardian Industries Corp., the world's largest mirror manufacturer with thirteen facilities on six continents introduces **Guardian Ultra Mirror™**. Using a patented process, Guardian produces Copper-Free Mirrors with outstanding technical properties, far exceeding today's toughest industry standards. It's the kind of innovation you would expect from the leading manufacturer of mirror glass. Guardian's Ultra Mirrors are proven to be superior to conventional mirrors in all accelerated tests including: CASS (copper accelerated salt spray), Humidity, Salt Fog, Ferric Chloride and Ammonia tests.

**Applications** - Guardian mirrors are available on clear glass from 1.7 mm through 6.0 mm, with the capability of producing colored mirrors by applying the mirror coating onto a colored substrate. Colors which may be available are gray, black, bronze, golden topaz, and pink rosa. Typical applications include wardrobe doors, bathroom mirrors, furniture, TV projection screens, display cases, vehicle mirrors, decorative walls, ceiling and pillar covers, exercise rooms and mirrors for dance studios. Guardian Laminated Mirrors provide the benefits of being a safety glazing product with the distortion free attributes of traditional laminated glass.

**Limitations** - The glazing contractor / installer is responsible for conducting appropriate sealant compatibility tests prior to use when installing mirrored glass. Generally, it's recommended that mechanical fasteners be used on all installations. Adhesives that release acetic acid or ammonia like compounds while curing not recommended for use, and rubberized mastics must be avoided. It should be noted that the best results are obtained with a factory or shop cut edge, and field cutting should be avoided to minimize edge deterioration. Glazing guidelines, such as those presented in the Glass Association of North America (formerly FGMA) Glazing Manual should be followed to minimize installation problems. Prolonged exposure to moisture, corrosive chemicals, solvents, solvent vapors and cleaning fluids will cause edge deterioration and silver spoilage. Weep system must be used for all J or C channel frame installations.

**Composition & Methods** - Guardian mirrors are produced on the latest state-of-the-art equipment. A 4 layer patented process to create these Copper-Free Mirrors involves an initial application of palladium as a super-sensitizer to the glass, followed by a layer of sensitizing tin providing the ultimate foundation for silver to glass adhesion. A layer of silver is applied for reflectivity with a fourth layer of GMP to protect the silver. The mirror is further protected and encapsulated with organic paints, which give the mirror its mechanical and chemical durability. At this point the mirrors may be further fabricated i.e. hole drilling, beveling and other edge preparation. And with our quality systems registered to ISO-9000 ensuring that Guardian Mirrors provide lasting brilliance and durability.

**Technical Conformances** - Applicable standards: Federal DDM-0411c and ASTM C 1503 "Standard Mirror Specifications." Safety applications require conformance to the Consumer Product Safety Commission federal standard 16 CFR 1201 regulates the use of glass and glass products in specified locations, such as doors, sidelights, and shower enclosures. These sections and other safety and quality standards are noted below:

[ASTM C-1503, Mirrors](#)

[ASTM C-1036, Flat Glass](#)

[ASTM C-1048, Heat-Treated Glass](#)

[ASTM C-1503, Silvered Flat Glass Mirrors](#)

[ASTM C-1172, Laminated Architectural Flat Glass](#)

[ANSI Z97.1, "Safety Performance and Methods of Test for Safety Glazing Material Used in Buildings"](#)

**Care & Maintenance** - Clean with a soft, grit free cloth using warm water. Do not use any acid, alkali or ammonia cleaners. Do not allow the mirror edges to remain wet. Note: Good ventilation will keep mirrors from "sweating" and creating condensing liquids which can be corrosive and damaging to mirrors.

**Installation** - Install with mechanical fasteners or incorporate a weep system with setting blocks into all J or C channel frame glazing systems. Setting blocks should not interfere with the proper operation of the "Weep System". Verify sealant compatibility by the sealant supplier. Provide for minimum face and edge clearance, as well as nominal bite. Make proper allowance for mirror glass, metal, and erection tolerance, plus expansion and contraction. Do not install mirror on freshly painted walls or plaster. Avoid use of rubberized mastics.

**Warranty** - Industry leading warranty. Guardian Ultra Mirrors are covered by a written limited warranty against defects in material and workmanship resulting in deterioration or clouding of the silver film for a period of ten (10) years from date of manufacture.

*Ultra Mirror is a trademark of Guardian Industries Corp.*