

Glass Defects Information Sheet

Based on ASTM Designation: C 1036 - 16

These standards have been established by the ASTM to define the identification process and qualifications for defects in Flat Glass. Sun Windows has adopted these standards as our baseline for determining acceptable glass in our window and door products. Please refer to the ASTM publications for complete details on their specifications.

The criteria listed is based on Quality Level 3 of the ASTM C 1036 -16 Specification for Flat Glass.

Quality level 3 is defined as production of architectural glass products including coated, heat treated, laminated, and other select glass products.

Inspection Method:

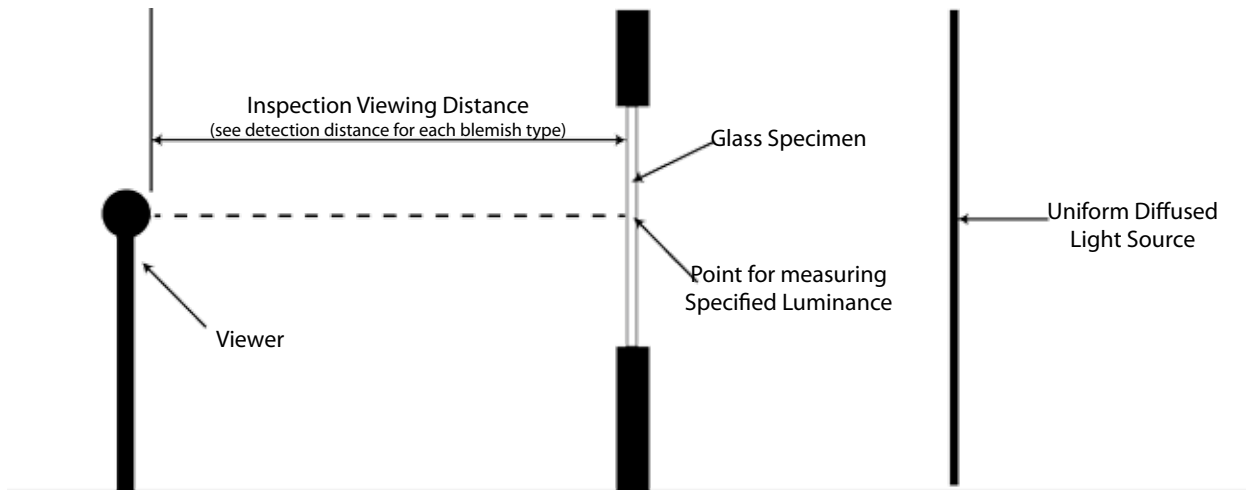
Inspection shall be made with 20/20 vision (naked eye or corrected).

View samples in vertical position.

Viewer shall be positioned perpendicular to the glass surface.

Lighting shall be indirect sunlight or other uniform diffused background light that simulates daylight with a minimum luminance of 1700 lux (160 foot-candles) measured at center of the glass surface.

Inspection Distances are specified in Blemish Detection Tables following.



Inspection Method Diagram

Blemish Definitions:

Chips

Chip/Shell Chip - circular indentation in the glass edge as a result of breakage of a small fragment.

Chip Depth - measured distance of a chip from the face of the glass into the thickness.

Chip Length - maximum distance parallel to the edge of the glass from one edge of a chip to the other.

Chip Width - maximum perpendicular distance from the edge of the glass to the inner edge of the chip.

Point Blemishes

Crush - pitted condition with a dull appearance.

Knot - inhomogeneity in the form of a vitreous lump.

Dirt - small particle of foreign matter embedded in the surface of flat glass.

Stone - crystalline inclusion in glass.

Gaseous Inclusion - round or elongated bubble in the glass.

Linear Blemishes

Scratch - an abrasion of a glass surface in the form of a line (straight, curved or both).

Rub - abrasion of a glass surface producing a frosted appearance.

Dig - deep scratch in the glass surface.

Allowable Shell Chip Size

Detection Distance = 4.5 meters (177 inches)

Chip Depth < or = 50% of glass thickness

Chip Width < or = glass thickness or 6 mm (1/4 inch) whichever is greater

Chip Length < or = 2 times the Chip Width

Allowable Point Blemish Size and Distribution

Defined: Point blemish is defined as crush, knots, dirt, stones, gaseous inclusions, and other similar imperfections

Detection Distance = 1 meter (39 inches)

Blemish Size: < 1.20 mm (0.05 in) Allowed

> or = 1.20 mm (0.05 in) and < 2.00 mm (0.08 in) Allowed with a minimum separation of 600 mm (24 inches)*

*Distance between two closest points. Only applies to blemish sizes that have separation criteria.

Allowable Linear Blemish Size and Distribution

Defined: Linear Blemish is defined as scratches, rubs, digs, and other similar imperfections, which may be straight or curved in nature. Viewing method, as defined above in "Inspection Method", must be followed. This includes 20/20 vision and the following distance and intensity specifications.

Detection Distances/Blemish Intensity:
Heavy = 3.3 meters (130 inches)
Medium = 1 meter (39 inches)
Light = 0.2 meters (8 inches)
Faint = less than 0.2 meters (8 inches)

Blemish Size:

All **Faint** and **Light** Linear Blemishes are allowed. Faint and Light blemishes can only be seen at 8 inches or closer.

Medium blemishes less than or equal to 3 inches are allowed with a minimum separation of 600 mm (24 inches) between blemishes.

Medium blemishes greater than 3 inches and any **Heavy** blemishes are not allowed.

