

Standard Specification for Flat Glass

1.1 This specification covers the requirements for annealed, monolithic flat glass supplied as cut sizes or stock sheets.

1.2 This specification is applicable for laboratory and field evaluation only to the extent that such evaluation can be carried out in accordance with the test method(s) prescribed herein.

1.3 This specification covers the quality requirements of flat, transparent, clear, and tinted glass. This glass is intended to be used primarily for architectural glazing products including: coated glass, insulating glass units, laminated glass, mirrors, spandrel glass, or similar uses.

3.2.3 *blemish, n*—imperfection in the body or on the surface of the glass; for the purpose of this specification, blemishes are divided into two categories:

3.2.3.1 *linear blemish, n*—scratches, rubs, digs, and other similar imperfections.

3.2.3.2 *point blemish, n*—crush, knots, dirt, stones, gaseous inclusions, and other similar imperfections.

5.1.3 *Blemishes*—Allowable blemishes are addressed in Section 6 and in Tables 3-5.

Quality	Typical Use
Quality-Q1 (cut-size or stock sheets)	Production of high-quality mirrors.
Quality-Q2 (cut-size or stock sheets)	Production of general use mirrors and other applications.
Quality-Q3 (cut-size or stock sheets)	Production of architectural glass products including coated, heat treated, laminated, and other select glass products.

TABLE 3 Allowable Point Blemish Size and Distribution For Cut Size Qualities^A

Blemish Size mm (in.) ^{B,C,D}	Q1 Quality 1	Q2 Quality 2	Q3 Quality 3	Q4 Quality 4
< 0.50 (0.02)	Allowed ^E	Allowed ^E	Allowed	Allowed
≥ 0.50 < 0.80 ≥ (0.02) < (0.03)	Allowed with a minimum separation of 1500 mm (60 in.) ^F	Allowed with a minimum separation of 600 mm (24 in.) ^F	Allowed	Allowed
≥ 0.80 < 1.20 ≥ (0.03) < (0.05)	None allowed	Allowed with a minimum separation of 1200 mm (48 in.) ^F	Allowed	Allowed
≥ 1.20 < 1.50 ≥ (0.05) < (0.06)	None allowed	Allowed with a minimum separation of 1500 mm (60 in.) ^F	Allowed with a minimum separation of 600 mm (24 in.) ^F	Allowed
≥ 1.50 < 2.00 ≥ (0.06) < (0.08)	None allowed	None allowed	Allowed with a minimum separation of 600 mm (24 in.) ^F	Allowed
≥ 2.00 < 2.50 ≥ (0.08) < (0.10)	None allowed	None allowed	None allowed	Allowed with a minimum separation of 600 mm (24 in.) ^F

TABLE 5 Allowable Linear Blemish Size and Distribution for Cut Size and Stock Sheet Qualities

Linear Blemish Size ^A Intensity Length	Q1 Quality 1 Distribution	Q2 Quality 2 Distribution	Q3 Quality 3 Distribution	Q4 Quality 4 Distribution
Faint ≤ 75 mm (3 in.)	Allowed with a minimum separation of 1500 mm (60 in.)	Allowed with a minimum separation of 1200 mm (48 in.)	Allowed	Allowed
Faint > 75 mm (3 in.)	None allowed	None allowed	Allowed	Allowed
Light ≤ 75 mm (3 in.)	None allowed	Allowed with a minimum separation of 1200 mm (48 in.)	Allowed	Allowed
Light > 75 mm (3 in.)	None allowed	None allowed	Allowed	Allowed
Medium ≤ 75 mm (3 in.)	None allowed	None allowed	Allowed with a minimum separation of 600 mm (24 in.)	Allowed

6. Test Methods

6.1 Test Methods for Type I Glass (Transparent Flat Glass):

6.1.1 *Viewing Conditions for Blemish Detection*—All visual inspections shall be made with 20/20 vision (naked eye or corrected). Place samples in the vertical position at the distance as specified in the sections following. The viewer shall look through the sample at an angle of 90° (perpendicular) to the surface using the following lighting unless otherwise specified: daylight (without direct sunlight) or other uniform diffused background lighting that simulates daylight, with a minimum luminance of 1700 lux (160 foot-candles) measured at the surface of the glass facing the light source. See Fig. 2.

6.1.1.1 *Blemish Detection for Point Blemish (Knots, Dirt, Stones, Crush, Gaseous Inclusions, and Other Similar Blemishes)*—Place samples at a distance of approximately 1 m (39 in.) from the viewer. If a blemish is detected, refer to Tables 3 and 4 for evaluation criteria.

6.1.1.3 *Detection for Linear Blemishes (Scratches, Rubs, Digs, and Other Similar Blemishes)*—Place samples approximately 4 m (160 in.) from the viewer. The viewer shall move towards the specimen until a blemish is detected (if any). The distance from the viewer to glass surface when the blemish is first detectable is defined as the detection distance. Blemish intensity is determined by comparing the detection distance to the blemish intensity chart in Table 10. Refer to Table 5 for evaluation criteria.

TABLE 10 Blemish Intensity Chart

Detection Distance	Blemish Intensity
Over 3.3 m (132 in.)	Heavy
3.3 to 1.01 m (132 to 40 in.)	Medium
1 to 0.2 m (39 to 8 in.)	Light
Less than 0.2 m (8 in.)	Faint

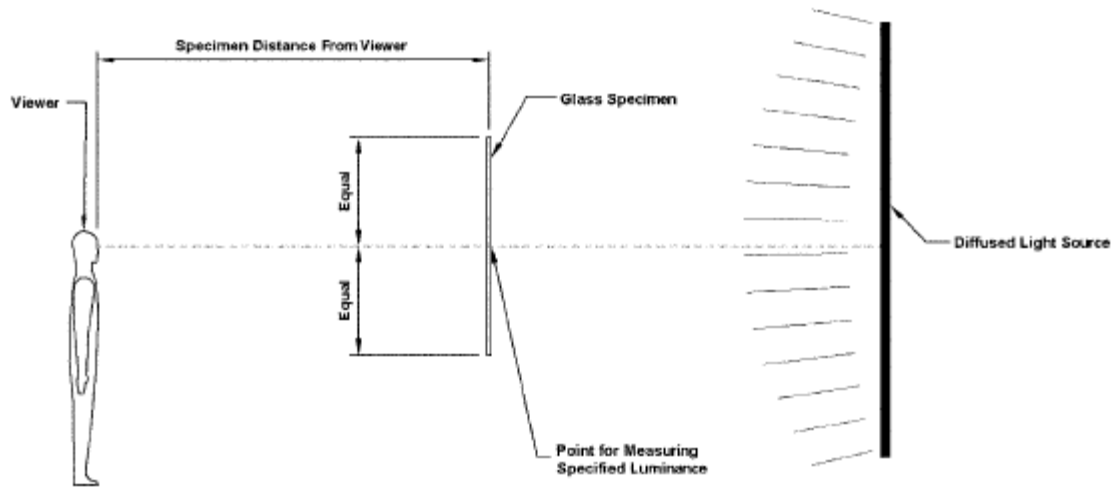


FIG. 2 Viewing Conditions for Blemish Detection