



Standard Specification for the Classification of the Durability of Sealed Insulating Glass Units¹

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1. Scope

1.1 This specification is applicable to those sealed insulating glass units, with one or two airspaces.

1.2 The classification of test specimens is based on frost or chemical dew point after the specified test duration(s).

1.3 Qualification under this specification is intended to provide a basis for the classification of the durability of sealed insulating glass units. SIGMA field correlation studies started in 1980 show that units that have achieved a Level A classification have less than 1 % field failure rate in ten years provided the glazing system weeps water away from contact with the unit edge seal. Class C and CB tested units have significantly higher field failure rates in ten years. SIGMA continues to gather correlation data.²

1.4 This specification is not applicable to units that are constructed from vision materials other than glass.

1.5 This specification does not cover other physical requirements such as appearance, thermophysical properties, heat and light transmission, and glass displacement.

NOTE 1—Sealed insulating glass units classified according to this specification are not necessarily suitable for structurally glazed applications. Factors such as sealant longevity to long term direct ultraviolet light exposure and sealant tensile strength must be reviewed for these applications.

2. Referenced Documents

2.1 ASTM Standards:

E 546 Test Method for Frost Point of Sealed Insulating Glass Units³

E 773 Test Method for Accelerated Weathering of Sealed Insulating Glass Units³

E 1887 Test Method for Fog Determination³

3. Terminology

3.1 Definition:

¹ This specification is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.22 on Durability Performance of Building Constructions.

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² Available from SIGMA, 111 East Wacker Drive, Suite 600, Chicago, IL 60601.

³ *Annual Book of ASTM Standards*, Vol 04.11.

3.1.1 *sealed insulating glass unit*—a preassembled unit, comprising sealed panes of glass separated by dehydrated space(s), intended for vision areas of buildings. The unit is normally used for windows, window walls, picture windows, sliding doors, patio doors, or other types of windows or doors.

4. Classification

4.1 Sealed insulating glass units tested in accordance with this specification shall be classified into one of three classes based on response to the tests and qualification requirements as shown in Table 1.

5. Performance Requirements

5.1 *Class C*—There shall be no frost or chemical dew point of each specimen when measured at a temperature of -34°C (-30°F) in accordance with Test Method E 546.

5.2 *Class B*—There shall be no frost or chemical dew point when measured at a temperature of -29°C (-20°F) in accordance with Test Method E 546.

5.3 *Class A*—There shall be no frost or chemical dew point when measured at a temperature of -29°C (-20°F) in accordance with Test Method E 546.

5.4 *Fog*—No fog shall be visible after testing in accordance with Test Method E 1887.

6. Test Specimens

6.1 Specimen design and construction for accelerated weathering tests shall be established by Test Method E 773.

7. Test Methods

7.1 Classify the sealed insulating glass units by following Test Method E 773 in accordance with Table 1 of this specification.

7.1.1 Accelerated Weathering Test:

7.1.1.1 Test six randomly selected test specimens for durations as shown in Table 1, Class C in accordance with Test Method E 773.

7.1.1.2 If the test specimens qualify for Class C as described in Section 5 of this specification, they may be tested further for durations as shown in Table 1, Class B. Place the specimens in the test racks so that the bearing edge and the weathering or exposed side remain the same as tested in previous class.