



Designation: E 2190 – 02

Standard Specification for Insulating Glass Unit Performance and Evaluation¹

This standard is issued under the fixed designation E 2190; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification is applicable to preassembled permanently sealed insulating glass units with one or two airspaces and preassembled insulating glass units with capillary tubes intentionally left open.

1.2 This specification is applicable only to sealed insulating glass units that are constructed with glass.

1.3 The qualification of test specimens is based on frost/dew point and on the absence of fog after the specified test durations.

1.4 Qualification under this specification is intended to provide a basis for evaluating the durability of sealed insulating glass units.

1.5 This specification is not applicable to sealed insulating glass units containing a spandrel glass coating due to test method limitations.

1.6 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 qualified according to this specification are not necessarily suitable for structurally glazed applications. Factors such as sealant longevity when exposed to long term ultraviolet light and the structural properties of the sealant must be reviewed for these applications. For more information on the requirements for structural sealant glazing applications refer to Specification C 1369, Guide C 1249, and Test Method C 1265.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- C 162 Terminology of Glass and Glass Products²
- C 717 Terminology of Building Seals and Sealants³
- C 1036 Specification for Flat Glass²
- C 1249 Guide for Secondary Seal for Sealed Insulating

- Glass Units for Structural Sealant Glazing Applications³
- C 1265 Test Method for Determining the Tensile Properties of an Insulating Glass Edge Seal for Structural Glazing Applications³
- C 1369 Specification for Edge Sealants for Structurally Glazed Insulating Glass Units³
- E 546 Test Methods for Frost Point of Sealed Insulating Glass Units⁴
- E 631 Terminology of Building Constructions⁴
- E 2188 Test Method for Insulating Glass Units Performance⁵
- E 2189 Test Method for Testing Resistance to Fogging in Insulating Glass Units⁵

3. Terminology

3.1 Definition of Terms:

3.1.1 For definitions of terms found in this Specification, refer to Terminology C 717, Terminology C 162 and Terminology E 631.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *sealed insulating glass unit, n*—a preassembled unit, comprising lites of glass, which are sealed at the edges and 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 fenestration.

4. Performance Requirements

4.1 The six units that complete the weather cycle and high humidity phases of Test Method E 2188 unbroken shall have the frost/dew point determined and reported.

4.2 Initial, intermediate (after the weather cycle phase) and final frost/dew points (after final high humidity test) shall be determined. For triple pane units, the frost/dew point is determined for all airspaces. The final frost/dew points shall be -40°C or colder when measured in accordance with Test Method E 546 or equivalent.

4.3 Final frost/dew points shall be determined after 24 h but no later than 7 days.

4.4 *Fog*—No fog shall be visible after testing in accordance with Test Method E 2189.

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

Current edition approved March 10, 2002. Published May 2002.

² *Annual Book of ASTM Standards*, Vol 15.02.

³ *Annual Book of ASTM Standards*, Vol 04.07.

⁴ *Annual Book of ASTM Standards*, Vol 04.11.

⁵ *Annual Book of ASTM Standards*, Vol 04.12.