



Standard Test Method for Frost Point of Sealed Insulating Glass Units in the Vertical Position¹

This standard is issued under the fixed designation E 576; 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.

This standard has been approved for use by agencies of the Department of Defense.

^{ε1} NOTE—Keywords were added in October 1999.

1. Scope

1.1 This test method describes a field or laboratory procedure for determining the frost point within the air space(s) of sealed insulating glass units, and establishes the criteria for determining whether that point is below or above a given or specified temperature.

1.2 This test method also describes the apparatus to be used for these determinations.

1.3 *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 limitations prior to use.* For specific hazard statements, see Notes 2 and 3.

2. Referenced Documents

2.1 *ASTM Standards:*

C 1036 Specification for Flat Glass²

E 77 Test Method for Inspection and Verification of Thermometers³

E 774 Specification for Sealed Insulating Glass Units⁴

3. Terminology

3.1 *frost point*—the temperature at which visible frost begins to deposit on the lower air space glass surface of a sealed insulating glass unit in contact with the measuring surface of the frost point apparatus.

3.2 *frost state*—the case where the frost point of a sealed insulating glass unit is above the test temperature specified by the purchaser or user.

3.3 *no-frost state*—the case where the frost point of a sealed insulating glass unit is below the temperature specified by the purchaser or user.

4. Summary of Test Method

4.1 This test method is conducted by the use of a special apparatus, consisting basically of two chilled cylindrical metal blocks positioned one over the other and separated by a gap of controllable distance. The upper block has an exposed flat circular surface, 25 mm (1 in.) in diameter, and can be chilled to far below the ice point by regulating the air gap distance between it and the lower metal block which is maintained at approximately -78°C (-109°F) by dry ice. The test specimen is placed in contact with this chilled flat circular surface of the upper block for specified short periods of time, with the metal surface at successively lower temperatures, to determine at what temperature frost appears on the corresponding lower air space glass surface.

5. Significance and Use

5.1 This test method is suitable for use under actual or simulated in-service conditions; that is, one side of the unit is exposed to room temperature, while the other side is exposed to natural or simulated weather conditions. Where the glazing conditions and the 24-h history are different or changed from previous conditions, the frost point may not be comparable to a previous measurement.

5.2 This test method is applicable for the uncoated or unfilmed clear (transparent) glass pane of sealed insulating glass units. If this apparatus is used with coated or filmed glass pane, the coating or film on the surface of glass pane may be damaged.

¹ This test method is under the jurisdiction of the 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 *Annual Book of ASTM Standards*, Vol 15.02.

³ *Annual Book of ASTM Standards*, Vol 14.03.

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