



Standard Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications¹

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

1. Scope

1.1 This specification covers chemically resistant, low expansion, Type I, borosilicate glass, Class A (see Specification E 438), used to manufacture corrosion-resistant pipe and fittings for drain, waste, and vent service.

1.2 The pipe and fittings covered by the specification are intended for chemical resistant service above and below grade under gravity flow or vacuum conditions.

1.3 The pipe and fittings shall have beaded or plain ends.

2. Referenced Documents

2.1 ASTM Standards:

C 600 Method of Thermal Shock Test on Glass Pipe²

C 623 Test Method for Young's Modulus, Shear Modulus, and Poisson's Ratio for Glass and Glass-Ceramics by Resonance²

C 693 Test Method for Density of Glass by Buoyancy²

E 438 Specification for Glasses in Laboratory Apparatus³

3. Ordering Information

3.1 The minimum ordering information for material under this specification shall include the following information:

3.1.1 ASTM designation and date of issue,

3.1.2 Manufacturer's catalog number or parts identification,

3.1.3 Quantity ordered,

3.1.4 Special test or certification requirements,

3.1.5 Special packaging or marking, if required, and

3.1.6 Accessory items such as couplings, drains, adapters, and cutters.

4. Materials and Manufacture

4.1 The glass components shall represent good workmanship as consistent with standard glass process capabilities.

5. Chemical Requirements

5.1 The chemical requirements shall be as described in Specification E 438.

6. Physical Requirements

6.1 The physical requirements shall be as described in Specification E 438.

6.2 Refer also to Annex A1 for additional physical requirements.

7. Operating Temperatures

7.1 *Minimum Operating Temperature*—The minimum rated operating temperature for all sizes shall be -40°F (-40°C) provided the material being conveyed is fluid.

7.2 *Maximum Operating Temperature*—The maximum rated continuous operating temperature shall be 212°F (100°C).

7.3 *Thermal Shock Resistance*—The maximum allowable temperature differential for installed systems shall be in accordance with Table 1 for the various pipe sizes. Maximum temperature differential refers to an almost instantaneous temperature change, such as low-pressure steam followed directly by a flush of ice cold water, or the reverse. Maximum temperature differential pertains to either inside or outside pipe surfaces.

7.3.1 Thermal shock resistance is not ordinarily tested. If thermal shock resistance may be questioned, it shall be tested in accordance with Method C 600. If all pieces tested pass the allowable temperature differential, the lot shall be accepted. If one or more failures occur, a retest shall be made using a sample size twice that of the first test. If any failures occur on the retest, the entire shipment shall be retested.

8. Pressure Rating

8.1 DWV piping systems are designed for gravity flow only.

8.2 All pipe sizes are suitable for vacuum service.

9. Dimensions and Permissible Variations

9.1 Beaded Flanges:

9.1.1 *Flange Face Flatness*—Maximum permissible deviation from a flat plane across the face of a flange on all sizes

¹ This specification is under the jurisdiction of ASTM Committee C-14 on Glass and Glass

Products and is the direct responsibility of Subcommittee C14.05 on Glass Pipe.

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

³ *Annual Book of ASTM Standards*, Vol 14.04.