



Designation: D 3982 – 98

An American National Standard

Standard Specification for Contact Molded “Fiberglass” (Glass Fiber Reinforced Thermosetting Resin) Duct and Hoods¹

This standard is issued under the fixed designation D 3982; 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 covers ducts and hoods fabricated by contact molding intended for use in handling corrosive fumes and process gases. Special attention is given to equipment that operates at temperatures over 180°F (82.2°C) with regard to strength and corrosion resistance.

1.2 The material of construction shall be “fiberglass” consisting of a polyester, vinyl ester, or other qualified resin-matrix systems with fiber reinforcement in accordance with Specification C 582.

1.3 This specification is not intended to cover selection of resins and reinforcements for specific chemical environments.

1.4 All descriptions and limitations in this specification are to include both ducts and hoods, where applicable.

1.5 This specification covers ducts and hoods up to a design pressure of ± 5 psig (34.5 Pa).

1.6 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:

C 581 Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass Fiber Reinforced Structures, Intended for Liquid Service²

C 582 Specification for Contact-Molded Reinforced Thermosetting Plastic (RTP) Laminates for Corrosion Resistant Equipment²

D 883 Terminology Relating to Plastics³

D 2583 Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor⁴

D 2584 Test Method for Ignition Loss of Cured Reinforced Resins⁴

F 412 Terminology Relating to Plastic Piping Systems²

F 436 Specification for Hardened Steel Washers⁵

2.2 NFPA Standard:

NFPA 91 Installation of Blower and Exhaust Systems for Duct, Stack and Vapor Removal or Conveying⁶

3. Terminology

3.1 Definitions:

3.1.1 The definitions used in this specification are in accordance with definitions in Terminologies D 883 and F 412, unless otherwise specified.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *calculated thickness*—this description is in accordance with the standard laminate composition tables for Types I and II in Specification C 582.

3.2.2 *contact molding*—includes the “hand layup” and the “spray up” methods of manufacture.

3.2.3 *flange cant*—the angle that an entire branch is off from being perpendicular to the main run centerline (see Fig. 1).

3.2.4 *flange flatness*—maximum deviation, (see Fig. 2) from the actual flange face not including warpage or perpendicularity.

3.2.5 *flange offset*—the amount that an entire branch is off the main run centerline (see Fig. 3).

3.2.6 *flange perpendicularity*—maximum angle that the plane (see Fig. 2) of the flange inside diameter makes with the perpendicular plane to the duct’s centerline.

3.2.7 *flange warpage*—the amount that a flange outside diameter pulls back from the plane of the inside diameter during the cure of the material (see Fig. 2).

3.2.8 *hand layup*—application of glass plies in sheet form by hand. Resin can be applied by either brushing, rolling, or spraying.

3.2.9 *minimum thickness*—take six thickness readings. The average of the six readings shall be a minimum of 85 % of the calculated thickness. This must contain the required layers of glass.

3.2.10 *spray up*—fiberglass roving is chopped and blown onto the mold in conjunction with resin and catalyst.

¹ This specification is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.23 on Reinforced Plastic Piping Systems and Chemical Equipment.

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² Annual Book of ASTM Standards, Vol 08.04.

³ Annual Book of ASTM Standards, Vol 08.01.

⁴ Annual Book of ASTM Standards, Vol 08.02.

⁵ Annual Book of ASTM Standards, Vol 15.08.

⁶ Available from National Fire Protection Assn., 470 Atlantic Ave., Boston, MA 02210.