



Designation: F402 – 05 (Reapproved 2012)

An American National Standard

Standard Practice for Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings¹

This standard is issued under the fixed designation F402; 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 U.S. Department of Defense.

1. Scope

1.1 This practice covers procedures for safe handling of solvent cements, primers, and cleaners used in joining thermoplastic pipe and fittings. The procedures are general ones and include safeguards against hazards of fire and precautions for protection of personnel from breathing of vapors and contact with skin or eyes.

1.2 The word *cleaner*, when used in this practice, refers to chemical cleaners.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D1600 Terminology for Abbreviated Terms Relating to Plastics

F412 Terminology Relating to Plastic Piping Systems

2.2 *Other Document:*

CFR Title 49, Transportation, Parts 1 to 199³

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology **F412**, and abbreviations are in accordance with Terminology **D1600**, unless otherwise specified.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *cleaner, chemical*—an organic solvent used to remove foreign matter from the surface of plastic pipe and fittings.

3.2.2 *primer*—an organic solvent, or blend of solvents, which enhances adhesion, applied to plastic pipe and fittings prior to application of a solvent cement.

3.2.3 *solvent cement*—an adhesive made by dissolving a plastic resin or compound in a suitable solvent or mixture of solvents. The solvent cement dissolves the surfaces of the pipe and fittings to form a bond between the mating surfaces provided the proper cement is used for the particular materials and proper techniques are followed.

4. Safe Handling

4.1 A number of the solvents contained in cements, primers, and cleaners are classified as airborne contaminants and flammable and combustible liquids. These products generally are composed of solvent blends which vary with manufacturers. Follow precautions given herein to prevent fire and injury to personnel. Specific safety information on a particular cement, primer, or cleaner may be found on the container label or in the Material Safety Data Sheet available from the manufacturer.

4.2 Avoid prolonged breathing of solvent vapors. When pipe and fittings are being joined in partially enclosed areas, use a ventilating device in such a manner as to maintain a safe level of vapor concentration with respect to toxicity^{4, 5} and flammability⁶ in the breathing area. Select ventilating devices and locate them so as not to provide a source of ignition to flammable vapor mixtures.

4.3 Keep cements, primers, and cleaners away from all sources of ignition, heat, sparks, and open flame.⁶

4.4 Keep containers of cements, primers, and cleaners tightly closed except when the product is being used. The container type shall be in accordance with CFR Title 49. Container labeling shall conform with the requirements of the Federal Hazardous Substance Act and OSHA Hazard Communication Act.

¹ This practice is under the jurisdiction of ASTM Committee **F17** on Plastic Piping Systems and is the direct responsibility of Subcommittee **F17.20** on Joining. Current edition approved Feb. 1, 2012. Published February 2012. Originally approved in 1974. Last previous edition approved in 2005 as F402 – 05. DOI: 10.1520/F0402-05R12.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

⁴ *Threshold Limit Values of Airborne Contaminants*, issued annually, American Conference of Governmental Industrial Hygienists, Cincinnati, OH.

⁵ Occupational Safety and Health Standards Federal Register Title 29, Part 1910.

⁶ "Flammable Liquids," *National Fire Codes NFICA*, issued annually, "Flammable Liquids," National Fire Protection Association.



4.5 Dispose of all rags and other materials used for mopping up spills in an outdoor safety waste receptacle. Empty the receptacle daily with proper consideration for its flammable hazard.

4.6 Most of the solvents used in pipe cements, primers, and cleaners can be considered eye irritants and contact with the eye should be avoided as it may cause eye injury. Proper eye protection and the use of chemical goggles or face shields is advisable where the possibility of splashing exists in handling these products. In case of eye contact, flush with plenty of water for 15 min and call a physician immediately.

4.7 Avoid contact with the skin. Wear proper gloves impervious to and unaffected by the solvents when contact with the

skin is likely. Application of the primers, cleaners, or solvent cements with rags and bare hands is not recommended. Brushes, daubers, and other suitable applicators can be used effectively for applying these products, thus avoiding skin contact. Dispose of used applicators in the same manner as the rags (see 4.5). In the event of contact, remove contaminated clothing immediately and wash skin with soap and water. Wash contaminated clothing before wearing them again.

5. Keywords

5.1 adhesive; cleaners; primer; safe handling; solvent cement; vapors

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