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UL Standard for Safety
for

Pressure Pipe and Couplings, Glass Fiber-Reinforced, for Underground Fire Service, UL 1713

Second Edition, Dated March 29, 1995

Revisions: This Standard contains revisions through and including July 15, 1996.

A change is indicated by a note following the affected item. The note is preceded and followed by an asterisk.

The new and/or revised requirements are substantially in accordance with UL's Bulletin on this subject dated March 25, 1996. The bulletin is now obsolete and may be discarded.

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New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Listing and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

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UL 1713

Standard for

**Pressure Pipe and Couplings,
Glass Fiber-Reinforced, for Underground Fire Service**

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Revisions of this standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction differing from those detailed in the requirements of this Standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These requirements cover glass-fiber-reinforced, thermosetting-resin pipe (RTRP) and glass-fiber-reinforced, plastic-mortar pipe (RPMP), and their couplings. The pipe is for use in underground fire service systems and connections to such systems.

1.2 Pipe covered by these requirements is designated as Class 100, 150, 200, 250, or greater for rated working pressures of 100, 150, 200, 250 psig (0.69, 1.03, 1.38, and 1.72 MPa), or higher, respectively, and has a nominal inside diameter of 4 to 60 inches.

1.3 Requirements for the installation and use of RTRP and RPMP pressure pipe and couplings are specified in the Standard for Outside Protection, NFPA No. 24-1992, and the Practice for Underground Installation of Flexible Reinforced Thermosetting Resin Pipe and Reinforced Plastic Mortar Pipe, ASTM D3839.

1.4 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this Standard, and that involve a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this Standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this Standard cannot be judged to comply with this Standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision, and implementation of this Standard.

2 General

2.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

3 Glossary

3.1 For the purpose of this standard, the following definitions apply.

3.2 EPOXY RESIN (THERMOSETTING) – A polymer containing two or more three-membered rings consisting of one oxygen and two carbon atoms, which is cured by cross-linking with an amine or anhydride hardener with or without heat, catalyst, or both.

3.3 GLASS FIBERS (STRUCTURAL WALL) – A commercial grade of E glass filaments the binder and sizing of which is compatible with the impregnating resin.

3.4 LINER – A filled or unfilled thermoplastic- or thermosetting-resin layer, nonreinforced or reinforced, forming the interior surface of the pipe.

3.5 PRESSURE CLASS – The working pressure of a specified pipe for water service at a specified maximum operating temperature.

3.6 POLYESTER RESIN (THERMOSETTING) – A polymer with two or more ester groups and containing ethylenic unsaturation, dissolved in a reactive diluent with vinyl unsaturation, that is cured by cross-linking by means of a free-radical initiated curing mechanism, such as peroxide catalyst and heat.

3.7 RPMP – A tubular product containing glass-fiber reinforcement and aggregate embedded in or surrounded by cured, thermosetting epoxy or polyester resin. The composite structure may contain granular or platelet fillers, thixotropes, pigments, or dyes. Liner and coating materials may include thermoplastic or thermosetting resins.

3.8 RTRP – A tubular product containing glass-fiber reinforcement embedded in or surrounded by cured, thermosetting epoxy or polyester resin. The composite structure may contain thixotropes, pigments, or dyes, but does not include granular or platelet fillers. Liner and coating materials may include thermoplastic or thermosetting resins.

3.9 RESIN – Any of a class of solid or pseudosolid organic materials, often of high molecular weight, with no definite melting point. The term is used to designate any polymer that is a basic material for plastics.

3.10 THERMOPLASTIC RESIN – A plastic that repeatedly can be softened by heating and hardened by cooling and that in the softened state can be fused or shaped by flow.

3.11 THERMOSETTING RESIN – A plastic that, after having been cured by heat or other means, is substantially infusible and insoluble.

CONSTRUCTION

4 Materials

4.1 Grade E glass, as specified in the Specification for and Testing Glass Yarns, ANSI/ASTM D578-90, shall be used as the glass-fiber reinforcement material in the structural wall of RTRP and RPMP pipe and couplings.

5 Pipe Joints

5.1 A joint shall be of the gasketed bell-and-spigot type, adhesive-bonded type, or mechanical type. See 5.2 and 14.1.1.

5.2 A mechanical joint may be flanged, threaded, compression couplings, or proprietary joints.

6 Sealing Gaskets

6.1 A sealing gasket shall be made of a vulcanized natural rubber or a synthetic-rubber compound and shall have uniform dimensions and sufficient thickness to provide a compression-like seal. See Elastomeric Parts Test, Section 8A.

6.1 revised July 15, 1996

PERFORMANCE

7 General

7.1 Representative samples of each class and size of pipe and couplings shall be subjected to the tests specified in Sections 8 – 14.

8 Rubber Materials Tests

Section 8 deleted July 15, 1996

8A Elastomeric Parts Tests

8A.1 An elastomeric part used to provide a seal shall have the following properties when tested as specified in the Standard for Gaskets and Seals, UL 157:

- a) Minimum tensile strength — 2000 pounds per square inch (psi) (13.8 MPa).
- b) Minimum ultimate elongation — 300 percent [1 to 4 inches (25.4 to 102 mm)].
- c) Permanent set of 3/16 inch (4.8 mm) when 1 inch (25.4 mm) marks are stretched to 3 inches (76.2 mm), held for 2 minutes and measured 2 minutes after release.
- d) Those properties relating to minimum tensile strength and elongation after oven aging; and hardness after oven aging, all as specified in UL 157. The maximum service temperature used to determine the oven time and temperature for oven aging is considered to be 60°C (140°F).

8A.1 added July 15, 1996