FM Approvals®

Member of the FM Global Group

Approval Standard for Ductile Iron Pipe and Fittings, Flexible Fittings and Couplings

Class Number 1610

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Foreword

The FM Approvals certification mark is intended to verify that the products and services described will meet FM Approvals' stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of Approval Standards is to present the criteria for Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for certification by FM Approvals shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product. Approval Standards strive to be performance-oriented. They are intended to facilitate technological development.

For examining equipment, materials and services, Approval Standards:

a) Must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and

b) Must be readily identifiable.

Continuance of Approval and listing depends on compliance with the Approval Agreement, satisfactory performance in the field, successful re-examinations of equipment, materials, and services as appropriate, and surveillance audits of the manufacturing facility.

FM Approvals LLC reserves the right in its sole judgment to change or revise its standards, criteria, methods, or procedures.

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1. INTRODUCTION

1.1 Purpose

1.1.1 This standard states Approval criteria for ductile iron pipe for use in underground fire protection mains. This standard also addresses rigid (elbows, tees, etc.) and flexible (swivel, etc.) fittings and couplings for joining pipe and fittings. The fittings and couplings may be rated for use below and above ground.

1.1.2 Displacements due to seismic events (earthquake) are beyond the scope of this standard.

1.1.3 Approval criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a surveillance audit program.

1.2 Scope

1.2.1 This standard encompasses the design and performance requirements for:

- Ductile iron water pipe, from NPS (Nominal Pipe Size) 3 through 36 inch (80 to 915 mm) for underground use;
- Rigid and flexible fittings or couplings, from NPS 3 through 12 inch (80 to 300 mm) for underground or aboveground use; and
- Rigid and flexible fittings or couplings, from NPS 14 through 36 inch (350 to 900 mm) for underground use. Other sizes may be considered for Approval on case by case basis.

Additional Notes:

- Ductile iron pipe is not permitted aboveground in fire protection systems.
- Aboveground use is limited to fitting and coupling products up to NPS 12 in. maximum. It may be acceptable to use ductile iron fittings or couplings larger than NPS 12 inch in limited aboveground applications when transitioning from the underground to the aboveground fire protection system. Examples of such use include bridge and river crossings and tunnel applications. In these situations special consideration must be given to the support system, accommodation for thermal expansion, and anchorage of components subject to hydraulic thrust. This will be reviewed on a case by case basis.

1.2.2 In cases where metric sized ductile iron pipe and fittings are to be examined for Approval, test criteria comparable to the United States equivalent size shall be used.

1.2.3 Recognized pipe wall thickness classes or pressure classes are as defined in Standards American National Standards Institute (ANSI)/American Water Works Association (AWWA) C150/A21.50, *Thickness Design of Ductile-Iron Pipe*, or Standard ANSI/AWWA C151/A21.51, *Ductile-Iron Pipe, Centrifugally Cast*. Other International Standards will be considered on a case by case basis.

1.2.4 FM Approvals will consider ductile iron pipe and fittings which are designed in accordance to national or international standards. Only after verification is made that the products to be reviewed are in conformance to ANSI/AWWA C150/A21.50, or Standard ANSI/AWWA C151/A21.51, or other nationally or internationally recognized standards will Approval testing commence. All Approval testing is to be conducted on production samples.

1.2.5 This standard is intended to verify that the product described will meet stated conditions of performance, safety and quality useful to the ends of property conservation.