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(First Edition)

American Water Works Association
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AWWA Standard

Internal Pipe Joint Seal Assemblies for Water Service

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AWWA Standard

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Contents

All AWWA standards follow the general format indicated subsequently. Some variations from this format may be found in a particular standard.

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C621.*

I. Introduction.

I.A. *Background*. Internal joint pipe repair or sealing is a method for no-dig rehabilitation of leaky joints in water transmission mains. This method of joint repair can be used to correct leaking pipe joints, to strengthen weak joints, to seal leaks at cracks, or prevent infiltration or exfiltration. Joint repair consists of bridging the existing pipe joint with a rubber seal and a corrosion-resistant band allowing continued movement of the pipe joint. This pipe rehabilitation method has a wide range of applications from circular pipe to square or box shapes and is available in a variety of widths up to 13 in. Custom seals can be designed for larger widths via the use of rubber sleeves. Because joint seals included in this standard are installed via man-entry, they are not suitable for circular pipes that are less than 24 in. in diameter. (Note: Some manufacturers/installers provide seals smaller than this depending on the access and pipeline configuration.) These joints are manufactured to withstand internal working pressures up to 300 psi though seals for higher pressures are also available.

I.B. *History*. The AWWA Standards Committee for Pipe Rehabilitation was formed in 1998 to develop standards on the topic. Development of this standard was authorized and initiated in 2009 in response to the water industry's request for a standard on internal joint pipe repair. This edition was approved by the AWWA Board of Directors on June 11, 2018.

I.C. *Acceptance*. In May 1985, the US Environmental Protection Agency (USEPA) entered into a cooperative agreement with a consortium led by NSF International (NSF) to develop voluntary third-party consensus standards and a certification program for direct and indirect drinking water additives. Other members of the original consortium included the Water Research Foundation (formerly AwwaRF) and the Conference of State Health and Environmental Managers (COSHEM). AWWA and the Association of State Drinking Water Administrators (ASDWA) joined later.

In the United States, authority to regulate products for use in, or in contact with, drinking water rests with individual states.† Local agencies may choose to impose requirements more stringent than those required by the state. To evaluate the health

* American National Standards Institute, 25 West 43rd Street, Fourth Floor, New York, NY 10036.

† Persons outside the United States should contact the appropriate authority having jurisdiction.

effects of products and drinking water additives from such products, state and local agencies may use various references, including:

1. Specific policies of the state or local agency.
2. Two standards developed under the direction of NSF*, NSF/ANSI 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI 61, Drinking Water System Components—Health Effects.
3. Other references, including AWWA standards, *Food Chemicals Codex, Water Chemicals Codex*†, and other standards considered appropriate by the state or local agency.

Various certification organizations may be involved in certifying products in accordance with NSF/ANSI 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdiction. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI 61 does not stipulate a maximum allowable level (MAL) of a contaminant for substances not regulated by a USEPA final maximum contaminant level (MCL). The MALs of an unspecified list of "unregulated contaminants" are based on toxicity testing guidelines (noncarcinogens) and risk characterization methodology (carcinogens). Use of Annex A procedures may not always be identical, depending on the certifier.

ANSI/AWWA C621 does not address additives requirements. Users of this standard should consult the appropriate state or local agency having jurisdiction in order to:

1. Determine additives requirements, including applicable standards.
2. Determine the status of certifications by parties offering to certify products for contact with, or treatment of, drinking water.
3. Determine current information on product certification.

II. Special Issues.

II.A. *Chlorine and Chloramine Degradation of Elastomers*. The selection of materials is critical for water service and distribution piping in locations where there is a possibility that elastomers will be in contact with chlorine or chloramines. Documented research has shown that elastomers such as gaskets, seals, valve seats, and encapsulations may be degraded when exposed to chlorine or chloramines. The impact of degradation is a function of the type of elastomeric materials, and the specifics of their application

* NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48113.

† Both publications available from National Academy of Sciences, 500 Fifth Street, NW, Washington, DC 20001.

for each water system component should be considered to provide long-term usefulness and minimum degradation (swelling, loss of elasticity, or softening) of the elastomer specified.

II.B. *Advisory Information on Material Application*. This standard defines the materials and methods for installation of flexible internal joint seals used in water transmission mains. Though some details may vary, all of the joint seals available on the market are applied in a similar fashion and have similar components as depicted in this standard. Internal pipe joint seal manufacturers should be contacted regarding the capabilities of the joint seals supplied and proper methods of installation.

III. Use of This Standard. It is the responsibility of the user of an AWWA standard to determine that the products described in that standard are suitable for use in the particular application being considered.

III.A. *Purchaser Options and Alternatives*. The following information should be provided by the purchaser.

1. Standard used—that is, ANSI/AWWA C621, Internal Pipe Joint Seal Assemblies for Water Service, of latest revision.
2. Joint type
3. Internal pipe diameter
4. Pipe material
5. Quantity
6. Rated pressure, including transient and test pressure
7. Details of federal, state, and local requirements regarding materials (Sec. 4.2.1.1)
8. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required (Sec 4.2.1.2)
9. Whether certification of workers/workmanship is required (Sec 4.2.1.3)
10. Service conditions if other than potable water (Sec 4.2.2.2)
11. Water quality conditions, such as pH, affecting retainer band design (Sec 4.2.3)
12. Number of flexible or rigid seal assemblies required for the application (Sec 4.3.1.1)
13. If watertight and/or rigid seal is required (Sec 4.3.1)
14. Field records required (Sec. 4.4.1)

III.B. *Modification to Standard*. Any modification of the provisions, definitions, or terminology in this standard must be provided by the purchaser.

IV. Major Revisions. This is the first edition of this standard.

V. Comments. If you have any comments or questions about this standard, please call AWWA Engineering and Technical Services at 303.794.7711, FAX at 303.795.7603, write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or e-mail at standards@awwa.org.

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AWWA Standard

Internal Pipe Joint Seal Assemblies for Water Service

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the selection and installation requirements for field-applied, mechanical, internal pipe joint seal assemblies for water service. Internal joint sealing is a method of in situ pipe joint rehabilitation that is used to correct leaking pipe joints; to strengthen weak joints or localized wall pitting and other structural defects at joints; to seal leaks at cracks; to prevent exfiltration or infiltration; or used in concert with other non-joint specific methods of pipe rehabilitation (cement–mortar lining, cured-in-place pipe lining, etc.).

Sec. 1.2 Purpose

The purpose of this standard is to provide the minimum requirements for selection and installation of internal pipe joint seal assemblies, including materials, dimensions, tolerances, and testing/verification procedures.

Sec. 1.3 Application

This standard can be referenced in specifications for selecting or installing internal pipe joint seal assemblies for water piping. The stipulations of this standard apply when this document has been referenced and then only to field-applied internal joint and wall seal assemblies for drinking water piping.