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(Revision of ANSI/AWWA C751-16)

AWWA Standard

Magnetic Inductive Flowmeters

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American Water Works Association

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 C751.*

I. Introduction.

I.A. *Background.* The first water meter that was produced in the United States was thought to be a positive displacement meter that was fabricated in 1857. Since then, a number of other technologies and designs have been introduced to the water industry, each with its special characteristics. The magnetic inductive flowmeter is one of the latest additions to the industry. The use of magnetic inductive flowmeters has received wide commercial acceptance for many years.

I.B. *History.* In 2007, the AWWA Standards Subcommittee on Magnetic Devices, a subcommittee of the AWWA Standards Committee on Rate Type Flowmeters, completed a Committee Report on Magnetic Inductive Flowmeters. The report was published in the June 2007 issue of *Journal AWWA,* and that report served as a basis for this AWWA standard. The first edition of the standard was approved by the AWWA Board of Directors on Jan. 16, 2016. This second edition of the standard was approved on Oct. 28, 2019.

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). The American Water Works Association (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 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.

* 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.

2. Two standards developed under the direction of NSF*: NSF/ANSI/CAN† 60, Drinking Water Treatment Chemicals—Health Effects, and NSF/ANSI/CAN 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/CAN 61. Individual states or local agencies have authority to accept or accredit certification organizations within their jurisdictions. Accreditation of certification organizations may vary from jurisdiction to jurisdiction.

Annex A, "Toxicology Review and Evaluation Procedures," to NSF/ANSI/CAN 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 C751 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. This standard is different in format from other AWWA standards that contain specific requirements for material, dimensions, workmanship, and other physical requirements. Different magnetic inductive flowmeters employ different materials and technologies. The software and the electronic components of magnetic inductive flowmeters are generally designed to work with the physical characteristics of each make of the equipment.

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,

* NSF International, P.O. Box 130140, 789 North Dixboro Road, Ann Arbor, MI 48105.

† Standards Council of Canada, 55 Metcalfe Street, Suite 600, Ottawa, ON K1P 6L5 Canada.

‡ Both publications available from The National Academies Press, 500 Fifth Street NW, Keck 360, Washington, DC 20001.

and encapsulations may be degraded when exposed to chlorine or chloramines. The impact of degradation is a function of the type of elastomeric material, chemical concentration, contact surface area, elastomer cross section, environmental conditions, and temperature. Careful selection of and specifications for elastomeric materials and the specifics of their application 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.

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 C751, Magnetic Inductive Flowmeters, of latest revision.
2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required.
3. Details of federal, state, and local requirements (Sec. 4.1).

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

IV. Major Revisions. Major revisions made to the standard in this edition include the following:

1. Information on chlorine and chloramine degradation of elastomers has been added to the foreword (Sec. II.A).
2. Obsolete references on the evaluation of the health effects of products and drinking water additives have been removed from the foreword.
3. A number of editorial improvements have been made throughout the document to improve clarity.

V. Comments. If you have any comments or questions about this standard, please contact 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 email at standards@awwa.org.

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American Water Works Association
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AWWA Standard

Magnetic Inductive Flowmeters

SECTION 1: GENERAL

Sec. 1.1 Scope

Magnetic inductive flowmeters or electromagnetic flowmeters are commonly called *magmeters*. The flowmeter referenced in this standard will be called a *magmeter* or *magnetic flowmeter* interchangeably. Magmeters are available in wafer style and threaded and flanged-end connection designs. These spool/tube design flowmeters are most commonly used in the water industry. This standard will focus on magmeters of this design.

This standard does not apply to the insertion type of magmeter. This standard does not address specific issues where a magmeter would be used in revenue service.

Sec. 1.2 Purpose

The purpose of this document is to review magnetic inductive flowmeter (magmeter) principles of operation, calibration, and selection.

Sec. 1.3 Application

The performance and the reliability of these meters with no moving parts will be discussed. The meters require less maintenance and are more accurate than mechanical meters in use today.

Magmeters are used in a wide variety of applications including the measurement of wastewater, raw water, treated water, and revenue generation and in different stages of the treatment process such as the measurement of settled