



**American Water Works
Association**

The Authoritative Resource for Safe Water®

ANSI/AWWA C704-08
(Revision of ANSI/AWWA C704-02)

AWWA Standard

Propeller-Type Meters for Waterworks Applications



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Foreword

This foreword is for information only and is not a part of ANSI/AWWA C704.

I. Introduction.

I.A. *Background.* Current-type water meters were first developed for measuring flowing air and water. A booklet published in Hamburg, Germany, in 1790, by Benjamin Gottlob Hoffman, described a form of current meter developed by Reinhard Woltman, which seems to have been the first practical meter for this purpose. It was originally developed to measure stream flow and was not considered adaptable for use in a closed pipe. Since then, current meters have changed materially in design, construction, and use and have been adapted for closed pipelines.

I.B. *History.* The first effort to standardize current-type meters for customer service in the United States resulted in the formulation of AWWA Standard Specifications for Cold-Water Meters—Current Type, in 1923. These were revised on July 25, 1947, as AWWA C701-47, Standard Specifications for Cold Water Meters—Current Type. During the period between 1923 and 1947, a different version of current-type meters was developed for use in special applications, such as pump station discharge and main line measurement. The original design for use in customer service lines contains a removable measuring cage in which a turbine operates, and the special applications meters do not. Instead, a propeller operates either directly within the pipeline itself or within the main meter body. This change in design results in differences in operating ranges, friction losses, and capacities of the two types. Because of development of this second type of propeller meter, AWWA Specification for Current Type Meters—Propeller Drive, C704, was adopted as tentative in 1949 and was made a standard on May 25, 1950.

Confusion results from having two standards for what is essentially the same type of meter, and considerable judgment is required in the selection of one or the other. The AWWA Meter Committee, in the 1970 revisions of ANSI/AWWA C701 and ANSI/AWWA C704, attempted to make the two standards more compatible in order to better assist the user in selection. Other revisions were approved by the AWWA Board of Directors on Jan. 26, 1975, Jan. 29, 1984, Jan. 26, 1992, and June 16, 2002. This edition of C704 was approved on Jan. 27, 2008.

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 American Water Works Association Research Foundation (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. An advisory program formerly administered by USEPA, Office of Drinking Water, discontinued on Apr. 7, 1990.
2. Specific policies of the state or local agency.
3. 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.
4. 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.

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

† NSF International, 789 N. Dixboro Road, Ann Arbor, MI 48105.

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

§ Both publications available from National Academy of Sciences, 500 Fifth Street N.W., Washington, DC 20418.