



**American Water Works
Association**

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ANSI/AWWA E200-18
(First Edition)

AWWA Standard

Progressive Cavity Chemical Metering Pumps

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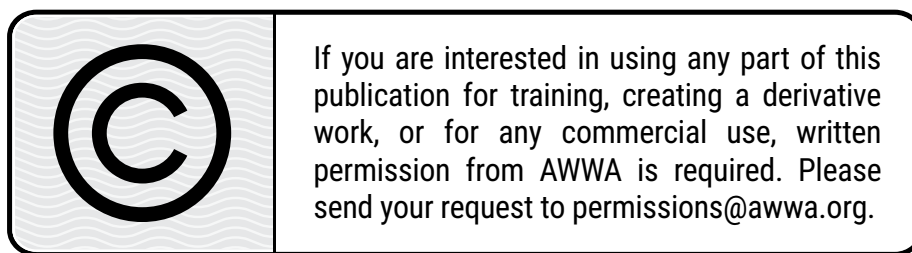
AWWA Standard

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Foreword

This foreword is for information only and is not a part of ANSI/AWWA E200.*

I. Introduction.

I.A. *Background.* This standard describes the minimum requirements for progressive cavity chemical metering pumps for water and wastewater treatment systems. This standard covers progressive cavity chemical metering pumps for materials resistant to aggressive chemicals including sodium hypochlorite (NaOCl), ferric chloride (FeCl₃), sulfuric acid (H₂SO₄), hydrochloric acid (HCl), and other strong acids and bases.

A progressive cavity chemical metering pump is a type of positive displacement pump and is also known as a progressing cavity pump, pro-cav pump, eccentric screw pump, or cavity pump. It transfers fluid by means of the progress, through the pump, of a sequence of small, fixed-shape, discrete cavities as its rotor turns. This leads to the volumetric flow being proportional to the rotation rate and to low levels of shear being applied to the pumped fluid. Hence these pumps have application in fluid metering and pumping of thin-to-viscous or shear-sensitive materials. The cavities taper down toward their ends and overlap with their neighbors, so that, in general, the cross section of fluid moving through the pump never changes and no flow pulsing is caused by the arrival of cavities at the outlet, other than that caused by compression of air or vapor in the fluid or by speed variation in the drive components. These pumps do not pulsate and can be fitted with a variety of highly accurate variable speed drives and reliable mechanical seals.

I.B. *History.* While inventing a compressor for jet engines, aviation pioneer René Moineau discovered in 1930 that this principle could also work as a pumping system. The University of Paris awarded Moineau a doctorate of science for his thesis on “the new capsulism.” His pioneering dissertation laid the groundwork for the modern progressive cavity pump.[†]

In 2015, AWWA’s Standards Council approved development of a new standard for Progressive Cavity Chemical Metering Pumps. The new standard was assigned to AWWA Standards Committee 273 for Progressive Cavity Chemical Metering Pumps.

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

[†] www.pumpsandsystems.com/topics/pumps/pumps/history-pumps-through-years?page=3 (accessed July 6, 2018).

This first edition of ANSI/AWWA E200 was approved by the AWWA Board of Directors on Jan. 20, 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). The American Water Works Association (AWWA) and the Association of State Drinking Water Administrators (ASDWA) joined later. In April 1990, USEPA formally withdrew its list of acceptable drinking water additives, and regulatory oversight of direct and indirect drinking water additives passed to the process developed by the consortium under the leadership of NSF.

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.
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 ANSI/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

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

[†] NSF International, 789 North Dixboro Road, Ann Arbor, MI 48105.

[‡] Both publications available from National Academy of Sciences, 500 Fifth Street, N.W., Washington, DC 20001.

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 E200 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. No special issues provided with this standard.

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 shall be provided by the purchaser:

1. Standard used—that is, ANSI/AWWA E200, Progressive Cavity Chemical Metering Pumps, of latest revision.
2. Whether compliance with NSF/ANSI 61, Drinking Water System Components—Health Effects, is required or not.
3. Details of federal, state, and local requirements (Sec. 4.1.1).
4. Request for elastomer test coupons (Sec. 4.1.2.2).
5. Request for stator dimensions (Sec. 4.1.4.2).
6. Request for quality measurement certificates (Sec. 4.1.4.2.2).
7. Apparent viscosity test requirements (Sec. 4.2.2.1.1).
8. Drive accuracy (Sec. 4.2.5.1).
9. Required turn down (Sec. 4.2.5.1.1).
10. Minimum dry film thickness other than 3 mils (Sec. 4.2.10.1).
11. Field top-coating (Sec. 4.2.10.2).
12. Required holiday testing (Sec. 4.2.11).
13. Vibration requirements (Sec. 4.2.12).
14. Required run-dry protection (Sec. 4.2.14).
15. Written instructions for storage requirements (Sec. 6.3.2).
16. Request for Affidavit of Compliance from manufacturer (Sec. 6.5).

IV. Major Revisions. This is the first edition of the 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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Progressive Cavity Chemical Metering Pumps

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard provides minimum requirements for progressive cavity chemical metering pumps used with polymers and aggressive chemicals including sodium hypochlorite (NaOCl), ferric chloride (FeCl₃), sulfuric acid (H₂SO₄), hydrochloric acid (HCl), and other strong acids and bases. This standard includes design, materials, application, testing, and delivery of these metering pumps.

Sec. 1.2 Purpose

The purpose of this standard is to provide minimum requirements for progressive cavity chemical metering pumps suitable for water and wastewater service, including design, materials, application, testing, and delivery.

Sec. 1.3 Application

This standard can be referenced by the purchaser for pumps described in Sec. 1.1.