

ANSI/AWWA **F130-22**
(First Edition)

AWWA Standard

Aeration Systems for Biological Wastewater Treatment

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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 F130.*

I. Introduction.

I.A. *Background.* Aeration systems for biological wastewater treatment bring air into contact with water for the purposes of transferring oxygen into the wastewater being treated. There are many types of aeration systems in use for biological wastewater treatment and this first edition of the standard describes three specific categories: Diffused Air, Jet Aeration, and Mechanical Surface Aeration. Additional categories may be added to future versions of this standard. Aeration systems may also be used for other water treatment applications, such as air stripping of volatile compounds, degasifying, and precipitation of inorganic contaminants, but those applications are outside the scope of this edition of the standard.

I.B. *History.* The need for a standard addressing aeration systems for biological wastewater treatment was recognized by the American Water Works Association (AWWA) in 2016. The AWWA Standards Council authorized the development of a new standard and formed an Aeration Systems Standards Committee to develop the new standard. This first edition of ANSI/AWWA F130, Aeration Systems for Biological Wastewater Treatment, was approved by the AWWA Board of Directors on June 10, 2022.

II. Special Issues. This standard has no applicable information for this section.

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 F130, Aeration Systems for Biological Wastewater Treatment, of latest revision.
2. Details of federal, state, provincial, territorial, and local requirements (Sec. 4.1).
3. Aeration system requirements (Sec. 4.3).

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

4. Whether updated plans, procedures, and required testing shall be provided (Sec. 4.4.5).
5. Whether or not spare parts are to be provided (Sec. 4.6.7.1).
6. Whether aeration system supplier shall have a representative on-site for the different stages of installation, testing, and initial startup (Sec. 5.1.1).
7. Whether factory testing of diffusers is required.
8. Whether any documentation required for permitting the aeration system is to be provided.
9. Whether or not an Affidavit of Compliance is required (Sec. 6.3).

III.B. *Modifications to Standard.* Any modification to 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, write to the department at 6666 West Quincy Avenue, Denver, CO 80235-3098, or email at standards@awwa.org.



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ANSI/AWWA F130-22
(First Edition)

AWWA Standard

Aeration Systems for Biological Wastewater Treatment

SECTION 1: GENERAL

Sec. 1.1 Scope

This standard describes the minimum requirements for aeration systems and equipment used in biological wastewater treatment. This standard does not cover Aeration Systems in potable water applications, such as air strippers or degasifiers. This standard describes three specific categories of aeration systems: Diffused Air, Jet Aeration, and Mechanical Surface Aeration. Additional categories may be added to future versions of this standard.

Sec. 1.2 Purpose

The purpose of this standard is to provide a minimum set of requirements for aeration systems for biological wastewater treatment. This standard is intended to assist with the design, procurement, installation, and commissioning of aeration systems.

Sec. 1.3 Application

This standard can be referenced for design, procurement, installation, and commissioning of aeration systems equipment used for biological wastewater treatment.

SECTION 2: REFERENCES

This standard references the following documents. In their latest editions, they form a part of this standard to the extent specified within the standard. In any case of conflict, the requirements of this standard shall prevail.

ASCE*/EWRI[†] 2—Measurement of Oxygen Transfer in Clean Water.

NSF[‡]/ANSI[§]/CAN[¶] 60—Drinking Water Treatment Chemicals—Health Effects.

NSF/ANSI/CAN 61—Drinking Water System Components—Health Effects.

SECTION 3: DEFINITIONS

The following definitions shall apply in this standard:

1. *Aeration*: A gas transfer unit process that allows for the absorption of gas (frequently oxygen or disinfectant) by water, the air stripping of volatile compounds, and the precipitation of inorganic contaminants.

2. *ATAD*: Area of tank/area of diffusers—intended to specify tank coverage with diffusers.

3. *Constructor*: The party that provides the work and materials for placement or installation.

4. *Diffused air*: Injection of a gas (air or oxygen) below a liquid surface, introduced through open or perforated tubes, plates, panels, domes, or disks near the bottom of the tank, which may include mechanical pumping or mixing equipment as part of diffused aeration equipment.

5. *Jet aeration*: Combined liquid pumping with air entrainment, as the pumping system circulates tank contents, ejecting it through a nozzle assembly. Jets are configured in either cluster or directional arrangements. Air supply is often blower-assisted, otherwise would be categorized as aspirating.

6. *Manufacturer*: The party who manufactures, fabricates, or produces materials or products.

* American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400.

[†] Environmental & Water Resources Institute is one of nine ASCE technical institutes.

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

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

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

7. *Mechanical surface aeration:* Surface aerators are typically float, bridge, or platform-mounted; and may include radial-flow low speed, axial flow high speed, aspirating devices, and horizontal rotors. Some surface aerators are equipped with pumping and submerged draft tubes or mixing impellers.

8. *Potable water:* Water that is safe and satisfactory for drinking and cooking.

9. *Purchaser:* The person, company, or organization that purchases any materials or work to be performed.

10. *Reclaimed water:* Wastewater that becomes suitable for beneficial use as a result of treatment.

11. *SOTE:* Standard oxygen transfer efficiency under the standard condition in clean water, expressed as a percentage (%). All terms in the description of the aeration system guaranteed performance testing (SOTE Testing) are as described in “A Standard for the Measurement of Oxygen Transfer in Clean Water”, ASCE/EWRI 2-06.

12. *SOTR:* Standard oxygen transfer rate in clean tap water at 20° C in units of kg O₂ per day.

13. *Supplier:* The party that provides materials or services. A supplier may or may not be the manufacturer.

14. *Wastewater:* A combination of the liquid and water-carried waste from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and stormwater that may be present.

SECTION 4: REQUIREMENTS

Sec. 4.1 Materials

If required by applicable regulatory agency and/or required in the purchase documents, materials shall comply with the requirements of the Safe Drinking Water Act, other federal regulations for wastewater systems, and other regulatory agency rules, as applicable.

Sec. 4.2 Categories of Aeration Systems

4.2.1 *Categories.* There are many types of aeration systems in use for wastewater treatment. This standard applies to three specific categories:

- diffused air
- jet aeration
- mechanical surface aeration