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An American National Standard

Standard Test Methods for Corrosivity of Water in the Absence of Heat Transfer (Weight Loss Methods)[1]

This standard is issued under the fixed designation D 2688; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

ϵ[1] NOTE—Footnotes were editiorially removed in July 1999.

1. Scope

1.1 These test methods cover the determination of the corrosivity of water by evaluating pitting and by measuring the weight loss of metal specimens. Pitting is a form of localized corrosion: weight loss is a measure of the average corrosion rate. The rate of corrosion of a metal immersed in water is a function of the tendency for the metal to corrode and is also a function of the tendency for water and the materials it contains to promote (or inhibit) corrosion.

1.2 The following two test methods are included:

Test Method	Corrosivity Test of	Sections
A	Internal Metallic Pipes (Coupon)	10 to 18
B	City and Building Distribution Water **(1, 2, 3, 4, 5)**[2]	19 to 30

1.3 *Test Method A* employs flat, rectangular-shaped metal coupons which are mounted on pipe plugs and exposed to the water flowing in metal piping in municipal, building, and industrial water systems.

1.4 *Test Method B* employs removable, tared pipe inserts which are installed in a plastic piping assembly tailored to provide the same surface and flow conditions as in a normal metal piping system. Proper dimensions are provided throughout so that streamline flow (no-flow distortion) results and corrosion and scale formed on the inserts will be the same as that occurring in the metal piping system being tested. Steel, galvanized steel, and soldered copper and copper inserts have been found to provide meaningful corrosion test results by this test method.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For a specific hazard statement, see 26.1.1.

2. Referenced Documents

2.1 *ASTM Standards:*

A 120 Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless, for Ordinary Use[3]

D 1129 Terminology Relating to Water[4]

D 1193 Specification for Reagent Water[4]

D 2331 Practices for Preparation and Preliminary Testing of Water-Formed Deposits[5]

3. Terminology

3.1 *Definitions:* —For definitions of terms used in these test methods, refer to Terminology D 1129.

4. Significance and Use

4.1 Since the two tendencies are inseparable for a metal to corrode and for water and the materials it contains to promote or inhibit corrosion, the corrosiveness of a material or the corrosivity of water must be determined in relative, rather than absolute, terms. The tendency for a material to corrode is normally determined by measuring its rate of corrosion and comparing it with the corrosion rates of other materials in the same water environment. Conversely, the relative corrosivity of water may be determined by comparing the corrosion rate of a material in the water with the corrosion rates of the same material in other waters. Such tests are useful, for example, for evaluating the effects of corrosion inhibitors on the corrosivity of water. Although these test methods are intended to determine the corrosivity of water, they are equally useful for determining corrosiveness and corrosion rate of materials.

5. Composition of Specimens

5.1 The specimens shall be similar in composition to the piping in the system in which the corrosion test is being made. Welded or seamless pipe shall be used in Test Method B; however, butt-welded piping specimens may be used in Test

[1] These test methods are under the jurisdiction of ASTM Committee D-19 on Water and are the direct responsibility of Subcommittee D19.03 on Sampling of Water and Water-Formed Deposits, and Surveillance of Water.

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[2] The boldface numbers in parentheses refer to the list of references at the end of this standard.

[3] Discontinued 1988 (Replaced by A 53)—See 1988 *Annual Book of ASTM Standards*, Vol 01.01.

[4] *Annual Book of ASTM Standards*, Vol 11.01.

[5] *Annual Book of ASTM Standards*, Vol 11.02.

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