



Designation: D1385 – 07 (Reapproved 2018)^{ε1}

Standard Test Method for Hydrazine in Water¹

This standard is issued under the fixed designation D1385; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

^{ε1} NOTE—Warning notes were editorially updated throughout and the Keywords section was added in August 2018.

1. Scope

1.1 This test method covers² the colorimetric determination of hydrazine in boiler feed waters, condensates, natural, and well waters that have been treated with hydrazine (N₂H₄). This test method is usable in the range from 5.0 to 200 µg/L (ppb) hydrazine. The range is for photometric measurements made at 458 nm in 50 mm cell. Higher concentrations of hydrazine can also be determined by taking a more diluted sample.

1.2 It is the users' responsibility to ensure the validity of this test method for untested types of waters.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* For specific precautionary statements, see 5.3, 8.4, and Footnote 5.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This test method is under the jurisdiction of ASTM Committee D19 on Water and is the responsibility of Subcommittee D19.03 on Sampling Water and Water-Formed Deposits, Analysis of Water for Power Generation and Process Use, On-Line Water Analysis, and Surveillance of Water

Current edition approved Aug. 1, 2018. Published September 2018. Originally approved in 1967. Last previous edition approved in 2013 as D1385 – 07 (2013)ε1. DOI: 10.1520/D1385-07R18E01.

² For further information on this test method, the following references may be of interest:

Watt, G. W., and Chrisp, J. D., "Spectrophotometric Method for the Determination of Hydrazine," *Analytical Chemistry*, Vol 24, No. 12, 1952, pp. 2006–2008; and Wood, P. R., "Determination of Maleic Hydrazide Residues in Plant and Animal Tissue," *Analytical Chemistry*, Vol 25, No. 12, 1953, pp. 1879–1883.

2. Referenced Documents

2.1 ASTM Standards:³

D1066 Practice for Sampling Steam
D1129 Terminology Relating to Water
D1193 Specification for Reagent Water
D3370 Practices for Sampling Water from Closed Conduits
D5810 Guide for Spiking into Aqueous Samples
D5847 Practice for Writing Quality Control Specifications for Standard Test Methods for Water Analysis
E60 Practice for Analysis of Metals, Ores, and Related Materials by Spectrophotometry
E275 Practice for Describing and Measuring Performance of Ultraviolet and Visible Spectrophotometers

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this standard, refer to Terminology D1129.

4. Summary of Test Method

4.1 When a solution of p-dimethylaminobenzaldehyde in methyl alcohol and hydrochloric acid is added to hydrazine in diluted hydrochloric acid solution, a characteristic yellow color of p-dimethylaminobenzalazine is formed. The yellow color formed is proportional to the hydrazine present and is in good agreement with Beer's law in the range from 5.0 to 200 µg/L (ppb) hydrazine.

5. Significance and Use

5.1 Hydrazine is a man-made chemical and is not found in natural waters. The determination of hydrazine is usually made on boiler feedwaters, process waters, and other waters that have been treated with hydrazine (N₂H₄) for the purpose of maintaining residuals to prevent corrosion by dissolved oxygen. This reducing chemical reacts with dissolved oxygen to form nitrogen and water. However, under certain conditions it

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.