



Designation: E1146 – 23

# Standard Specification for Muriatic Acid (Technical Grade Hydrochloric Acid)<sup>1</sup>

This standard is issued under the fixed designation E1146; 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 ( $\epsilon$ ) 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.*

## 1. Scope\*

1.1 This specification covers muriatic acid, also known as technical grade hydrochloric acid.

1.2 The following applies to all specified limits in this specification: for purposes of determining conformance with this specification, an observed value or a calculated value shall be rounded off “to the nearest unit” in the last right hand digit used in expressing the specification limit, in accordance with the rounding-off method of Practice E29.

1.3 This specification includes requirements for muriatic acid available commercially in 20° Baumé and 22° Baumé concentration grades.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

1.5 Review the current Safety Data Sheets (SDS) for detailed information concerning toxicity, first aid procedures, handling, and safety precautions. Consult current OSHA regulations, suppliers’ Safety Data Sheets, and local regulations for all materials used in this specification.

1.6 *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.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standard-*

*ization 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.*

## 2. Referenced Documents

- 2.1 *ASTM Standards*:<sup>2</sup>
  - E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications
  - E224 Test Methods for Analysis of Hydrochloric Acid
  - E300 Practice for Sampling Industrial Chemicals

## 3. Requirements

3.1 Muriatic acid shall conform to this specification:

Property	20° Baumé	22° Baumé
Total acidity as HCl, % mass (m/m)	30.71 to 32.93	35.02 to 37.14
Fe, $\mu\text{g/g}$ (ppm)	5 max	5 max
Baumé gravity at 15.5/15.5 °C	19.60 to 20.80	21.90 to 23.00

## 4. Sampling

- 4.1 Sample muriatic acid in accordance with the appropriate sections of Practice E300 for simple liquids.
- 4.2 Take composite sample of not less than 1 L.

## 5. Test Methods

- 5.1 Determine the requirements as specified in 3.1 using the test procedures described in Test Methods E224.

## 6. Keywords

- 6.1 muriatic acid; technical grade hydrochloric acid

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D16 on Aromatic, Industrial, Specialty and Related Chemicals and is the direct responsibility of Subcommittee D16.10 on Acids.

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<sup>2</sup> 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.

\*A Summary of Changes section appears at the end of this standard

**SUMMARY OF CHANGES**

Subcommittee D16.10 has identified the location of selected changes to this standard since the last issue (E1146 – 16) that may impact the use of this standard. (Approved April 1, 2023.)

- (1) Updated Section 1 to meet D16 Guidelines.
- (2) Added Practice E29 to Referenced Documents Section 2.
- (3) Updated Section 3 to meet current ASTM Form and Style guidelines.
- (4) Modified Table in 3.1.

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