



Designation: C375 – 22

Standard Classification of Water Used in Milling of Porcelain Enamel¹

This standard is issued under the fixed designation C375; 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.

INTRODUCTION

This standard sets forth Class A, B, and C categories for water used for milling porcelain enamel based on the concentrations of allowable contaminants and the quality requirements of the fired finish.

1. Scope

1.1 This classification covers water used in the milling of porcelain enamel frit.

1.2 *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.*

1.3 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[D511 Test Methods for Calcium and Magnesium In Water](#)

[D512 Test Methods for Chloride Ion In Water](#) (Withdrawn 2021)³

¹ This classification is under the jurisdiction of ASTM Committee B08 on Metallic and Inorganic Coatings and is the direct responsibility of Subcommittee B08.12 on Materials for Porcelain Enamel and Ceramic-Metal Systems.

Current edition approved May 1, 2022. Published May 2022. Originally approved in 1955. Last previous edition approved in 2016 as C375 – 58(2016). DOI: 10.1520/C0375-22.

² 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.

³ The last approved version of this historical standard is referenced on www.astm.org.

[D513 Test Methods for Total and Dissolved Carbon Dioxide in Water](#)

[D516 Test Method for Sulfate Ion in Water](#)

[D858 Test Methods for Manganese in Water](#)

[D1068 Test Methods for Iron in Water](#)

[D1126 Test Method for Hardness in Water](#)

[D1293 Test Methods for pH of Water](#)

[D3370 Practices for Sampling Water from Flowing Process Streams](#)

3. Classification

3.1 Three classes of water are covered, based on the maximum impurity analyses as defined in [Table 1](#). For porcelain enamel frits, Class A water should cause no difficulties in the production of a high quality finish. Class B water may be used by slight compensations in processing. Mill addition water falling into Class C should be treated before use in order to preclude faulty enamel production.

4. Methods of Analysis

4.1 Determine the elements and properties listed in [Table 1](#) in accordance with the following ASTM methods:

4.1.1 *Sampling*—Practice [D3370](#).

4.1.2 *Bicarbonate*—Test Method [D513](#).

4.1.3 *Calcium and Magnesium*—Test Method [D511](#).

4.1.4 *Chloride*—Test Method [D512](#).

4.1.5 *Hardness*—Test Method [D1126](#).

4.1.6 *Iron*—Test Method [D1068](#).

4.1.7 *Manganese*—Test Method [D858](#).

4.1.8 *pH*—Test Method [D1293](#).

4.1.9 *Sulfate*—Test Method [D516](#).

TABLE 1 Classification of Water for Use in Milling Porcelain Enamel

Class	Maximum Concentrations, ppm								pH
	Calcium	Magnesium	Iron	Manganese	Sulfate	Chloride	Hardness	Bicarbonate	
A	31	7.5	0.30	0.005	25	13	38.5	117	7.6
B	43	10.0	0.62	1.05	102	18	53.0	86	7.5
C	53	18.0	0.43	...	105	18	71.0	78	7.3

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, Tel: (978) 646-2600; <http://www.copyright.com/>

iTeh Standards (<https://standards.iteh.ai>) Document Preview

[ASTM C375-22](#)

<https://standards.iteh.ai/catalog/standards/sist/b9ef877b-29f4-4c7f-8e00-86cb9faef05b/astm-c375-22>