



Designation: **C375–58 (Reapproved 2016) 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D512 Test Methods for Chloride Ion In Water (Withdrawn 2021)³

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

~~D1888 Methods Of Test for Particulate and Dissolved Matter in Water (Withdrawn 1989)~~³

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,

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.

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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.

TABLE 1 Classification of Water for Use in Milling Porcelain Enamel

Class	Maximum Concentrations, ppm								pH	Bicarbonate
	Calcium	Magnesium	Iron	Manganese	Sulfate	Chloride	Hardness	Total Solids		
A	31	7.5	0.30	0.005	25	13	38.5	147	117	7.6
B	43	10.0	0.62	1.05	102	18	53.0	198	86	7.5
C	53	18.0	0.43	...	105	18	71.0	284	78	7.3

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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**.

4.1.10 *Total Solids*—Test Method **D1888**.

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