



Standard Classification of Water Used in Milling of Porcelain Enamel¹

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1. Scope

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

2. Referenced Documents

2.1 *ASTM Standards*:²

D 511 Test Methods for Calcium and Magnesium In Water

D 512 Test Methods for Chloride Ion In Water

D 513 Test Methods for Total and Dissolved Carbon Dioxide in Water

D 516 Test Method for Sulfate Ion in Water

D 858 Test Methods for Manganese in Water

D 1068 Test Methods for Iron in Water

D 1126 Test Method for Hardness in Water

D 1293 Test Methods for pH of Water

D 1888 Methods of Test for Particulate and Dissolved Matter in Water³

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³ Withdrawn.

D 3370 Practices for Sampling Water from Closed Conduits

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*—Practices **D 3370**.

4.1.2 *Bicarbonate*—Test Methods **D 513**.

4.1.3 *Calcium and Magnesium*—Test Methods **D 511**.

4.1.4 *Chloride*—Test Methods **D 512**.

4.1.5 *Hardness*—Test Method **D 1126**.

4.1.6 *Iron*—Test Methods **D 1068**.

4.1.7 *Manganese*—Test Methods **D 858**.

4.1.8 *pH*—Test Methods **D 1293**.

4.1.9 *Sulfate*—Test Method **D 516**.

4.1.10 *Total Solids*—Test Methods **D 1888**.

TABLE 1 Classification of Water for Use in Milling Porcelain Enamel

Class	Maximum Concentrations, ppm							Hardness	Total Solids	Bicarbonate	pH
	Calcium	Magnesium	Iron	Manganese	Sulfate	Chloride					
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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