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Standard Specification for Sodium Metasilicate¹

This standard is issued under the fixed designation D 537; 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.

1. Scope

1.1 This specification for sodium metasilicate covers material suitable for various washing, cleaning, and scouring processes, with or without soap as conditions demand, and where a moderately strong alkaline material is desired.

1.2 This material may be hazardous if not properly managed.

1.3 Precautionary information for the safe use, storage, and disposal of this material should be preliminarily obtained from suppliers and others.

1.4 In case of personal accident with this material, apply appropriate first aid; telephone the nearest Poison Control Center for assistance, and get medical attention immediately.

2. Referenced Documents

2.1 ASTM Standards:

D 501 Test Methods of Sampling and Chemical Analysis of Alkaline Detergents²

3. Sodium Metasilicate

3.1 Sodium metasilicate shall be a uniform product in one of the following forms as specified by the purchaser:

3.1.1 Type I— White granular or crystalline material.

3.1.2 *Type II*— Granular anhydrous material.

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4. Ordering Information

4.1 Sodium metasilicate shall be purchased by net weight but in the event of weight shortage it shall be recognized that sodium metasilicate is subject to a possible gain or loss of weight due to atmospheric or storage conditions, or both.

² Annual Book of ASTM Standards, Vol 15.04.

Therefore, the calculation of net weight shall be based upon a product containing 98 % of sodium metasilicate calculated as $Na_2SiO_3 \cdot 5H_2O$ for Type I or 91.5 % of sodium metasilicate calculated as Na_2SiO_3 for Type II. The net weight of the material to be paid for shall be calculated as follows:

$$W = (R \times T)/98 \text{ for Type I}$$
(1)

$$W = (R \times T)/91.5 \text{ for Type II}$$
(2)

where:

- W = net weight of the material to be paid for,
- R = net weight of the material as received,
- $T = \text{total sodium metasilicate calculated as Na₂SiO₃· 5H₂O, and$

T' = total sodium metasilicate calculated as Na₂SiO₃.

4.2 In the event that the calculation under 4.1 results in a figure greater than 100 %, the seller waives the right to invoice the purchaser for any amount in excess of 100 %.

5. Chemical Composition

5.1 Sodium metasilicate, as received, shall conform to the requirements as to chemical composition prescribed in Table 1.

6. Sampling and Analysis

6.1 The material shall be sampled and analyzed in accordance with Test Methods D 501 . d537-85-1997

TABLE 1 Chemi	cal Requirements
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	Type I		Type II	
	min	max	min	max
Sodium metasilicate:				
Calculated as Na ₂ SiO ₃ ·5H ₂ O, %	98.0			
Calculated as Na ₂ SiO ₃ , %			91.5	
Total alkalinity to methyl orange, as Na ₂ O, %	28.5	30.0	50.0	52.0
Total silica as SiO ₂ , %	27.5	29.0	45.0	
Matter insoluble in water, %		0.2		0.3
Carbonates as CO ₂ , %		1.2		2.0

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¹ This specification is under the jurisdiction of the ASTM Committee D-12 on Soaps and Other Detergents and is the direct responsibility of Subcommittee D12.14 on Specifications for Analysis of Inorganic Alkaline Detergents.

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