PRODUCT DATA SHEET

Sodium Metaborate 4 Mol and 8 Mol

4 Mol: $NaBO_2 \cdot 2H_2O$ [or $Na_2B_2O_4 \cdot 4H_2O$]
8 Mol: $NaBO_2 \cdot 4H_2O$ [or $Na_2B_2O_4 \cdot 8H_2O$]
Sodium metaborate dihydrate | Sodium metaborate tetrahydrate
Grade: Granular
CAS Numbers 16800-11-6 | 10555-76-7

Essential buffering agent

Applications

Adhesives

Used in the preparation of starch and dextrin adhesives due to the high degree of alkalinity and crosslinking reaction of borate anions with polyhydroxy groups. The interchain linkages produce an adhesive with increased viscosity, quicker tack, and better fluidity properties. These qualities are essential for use in corrugated boxes, paper bags, laminated paper boards, carton/case sealing, gummed tape, and tube winding.

Textile processing

Textiles, such as cotton, are bleached with hydrogen peroxide solutions which can be stabilized by sodium metaborate. In addition, it neutralizes the acidic oxidation products formed during bleaching. Textile sizing can be controlled by incorporating sodium metaborate starch adhesives within the thread and by binding the fibers together to increase the tensile strength of the thread.

Corrosion inhibition

Incorporated in many proprietary water treatment chemicals requiring pH control and corrosion inhibition. They are used for protecting central heating systems and cooling towers against corrosion.

Industrial detergents and cleaners

Used in hard surface cleaners to remove oil, grease, rust, scale, and other particulates from metal or glass surfaces. The cleaning action is enhanced by the alkaline conditions imparted by sodium metaborate. Sodium metaborate can also be incorporated in liquid laundry detergents for pH control, enzyme stabilization, and its builder properties.

Theoretical chemical composition		
	4 Mol	8 Mol
Boric oxide, B_2O_3	34.18%	25.25%
Sodium Oxide, Na_2O	30.43%	22.48%
Water of crystallization, H_2O	35.39%	52.26%
Anhydrous equivalent, $NaBO_2$	64.62%	47.73%

Characteristics		
	4 Mol	8 Mol
Molecular weight	101.83	137.88
Specific gravity	1.90	1.74

pH

Aqueous solutions of sodium metaborateshow a moderate increase in pH with increasing concentration.

Sodium metaborate (wt)	pH @20°C (68°F)
0.1%	10.5-10.6
0.5%	10.8-10.9
1.0%	11.0-11.1
2.0%	11.2-11.3
4.0%	11.4-11.5
6.0%	11.5-11.6
8.0%	11.6-11.8
10.0%	11.8-11.8
15.0%	11.9-12.0
18.0%	12.0-12.2

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Solubility

The high solubility of sodium metaborate can provide a much higher concentration of borate ions in solution than borax 5 mol or borax at the same temperature.

Solubility in water		
Temperature °C (°F)	% by weight	
	4 Mol	8 Mol
0 (32)	22.4	30.4
5 (41)	24.3	32.9
10 (50)	26.3	35.6
15 (59)	28.6	38.8
20 (68)	31.0	41.9
25 (77)	33.4	45.3
30 (86)	36.5	49.5
35 (95)	39.6	53.6
40 (104)	43.2	58.5
45 (113)	47.7	64.5
50 (122)	52.8	71.5
53.6* (128.6)	57.1	77.3
55 (131)	57.6	78.0
60 (140)	59.3	80.3
65 (149)	61.1	82.8
70 (158)	63.3	85.7
75 (167)	65.3	88.4
80 (176)	67.6	91.6
85 (185)	70.3	95.1
90 (194)	73.4	99.3
95 (203)	76.8	103.9
100 (212)	81.1	109.8

**Transition to sodium metaborate 4 mol and 8 mol, which is stable from 53.6°C to 105°C*

Stability

Sodium metaborate is stable at ordinaty temperatures. If exposed to the atmosphere for extended periods, it will pick up carbon dioxide from the air and form sodium carbonate and borax. Sodium metaborate shows little tendency to cake except after prolonged storage or if it becomes severely wetted by rain or substantial water penetration. When stored under normal conditions of temperature and humidity, sodium metaborate is unlikely to cake or change chemically. It is, of course, essential to maintain integrity of the packaging

Melting point

The crystalline salt begins to dissolve in its own water at about 90°C (194°F) for 4 mol and 53.5°C (128°F) for 8 mol. The anhydrous salt fuses to a clear glass at 966°C (1770°F). Some vaporization occurs above 1230°C (2246°F),

Containers

May be available in bulk, IBCs, or small bags

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About U.S. Borax

U.S. Borax, part of Rio Tinto, is a global leader in the supply and science of borates—naturally-occurring minerals containing boron and other elements. We are 1,000 people serving 650 customers with more than 1,800 delivery locations globally. We supply around 30% of the world's need for refined borates from our world-class mine in Boron, California, about 100 miles northeast of Los Angeles.

About 20 Mule Team products

U.S. Borax produces the *20 Mule Team*® borates family of products from naturally occurring minerals and have an excellent reputation for purity and safety when used as directed. Borates are key ingredients in a number of industrial applications including fiberglass, glass, ceramics, batteries and capacitors, wood preservatives, and flame retardants.

High quality, high reliability, high performance borate products. It's what we're known for.