Product Data Sheet

Sodium Metaborate 8 Mol

$NaBO_2 \cdot 4H_2O$ [or $Na2B_2O_4 \cdot 8H_2O$]
Sodium Metaborate Tetrahydrate
Technical Grade: Granular

CAS Number 10555-76-7

Sodium metaborate 8 mol, an alkaline salt with excellent buffering properties, consists of white crystalline granules. The high solubility of sodium metaborate 8 mol can provide a much higher concentration of borate ions in solution than *Neobor*® borax 5 mol or borax at the same temperature.

Applications and benefits

Photochemicals

Sodium metaborate 8 mol is used as a component of photographic developers and replenishers. Its principal function as a buffering agent is to control the pH within close limits. This is essential both in fine grain black-and-white developers and in ensuring the correct color balance in color developers.

Adhesives

The specific effect of sodium metaborate 8 mol in the preparation of starch and dextrin adhesives is due to the high degree of alkalinity and the 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, sodium metaborate neutralizes the acidic oxidation products formed during bleaching. Textile sizing can be controlled by incorporation of the adhesive material within the thread and by binding all the fibers together to increase the tensile strength of the thread. Sodium metaborate is added to the starch adhesives to accomplish these functions.

Detergents and cleaners

Sodium metaborate 8 mol is 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.

Corrosion inhibition

Sodium metaborate 8 mol is 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.

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20 MULE TEAM BORAX™
RioTinto

Chemical and physical properties

Theoretical composition	
Boric oxide, B_2O_3	25.25%
Sodium oxide, Na_2O	22.48%
Water of crystallization, H_2O	52.26%
Anhydrous equivalent, $NaBO_2$	47.73%

Characteristics	
Molecular weight $NaBO_2 \cdot 4H_2O$	137.88
Specific gravity	1.74

Stability

Sodium metaborate 8 mol is stable at ordinary 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 8 mol shows little tendency to cake except after prolonged storage or if it becomes severely wetted by rain or substantial water penetration. Sodium metaborate 8 mol has a slight vapor pressure which increases with warmer temperatures. This can cause crystallization at particle contact points, resulting in caking. Sodium metaborate 8 mol will slowly lost waters of crystallization if exposed to warm, dry atmosphere. It is, of course, essential to maintain the integrity of the packaging.

Melting point

The crystalline salt begins to melt in its own water at about 53.5°C (128°F). The anhydrous salt fuses to a clear glass at 966°C (1770°F). Some vaporization occurs above 1230°C (2246°F).

Hydrogen ion concentration

Aqueous solutions of sodium metaborate 8 mol show a moderate increase in pH with increasing concentration:

Sod. met. 8 mol (wt.)	pH @ 20°C (68°F)
0.1%	10.5
0.5%	10.8
1.0%	11.0
2.0%	11.2
4.0%	11.4
6.0%	11.5
8.0%	11.6
10.0%	11.8
15.0%	11.9
18.0%	12.0

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Solubility in water, as $NaBO_2 \cdot 4H_2O$ [or $Na_2B_2O_4 \cdot 8H_2O$]	
Temp °C (°F)	**% by weight**
0 (32)	30.4
5 (41)	32.9
10 (50)	35.6
15 (59)	38.8
20 (68)	41.9
25 (77)	45.3
30 (86)	49.5
35 (95)	53.6
40 (104)	58.5
45 (113)	64.5
50 (122)	71.5
53.6* (128.6)	77.3
55 (131)	78.0
60 (140)	80.3
65 (149)	82.8
70 (158)	85.7
75 (167)	88.4
80 (176)	91.6
85 (185)	95.1
90 (194)	99.3
95 (203)	103.9
100 (212)	109.8

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