

PRODUCT DATA SHEET



Disodium octaborate tetrahydrate

Powder and liquid formulations

CAS Number 12280-03-4



Multi-function cleaning and flame protection

Polybor[®] is a mild alkaline salt consisting of a fine, white powder that is readily soluble in water.

Applications

Flame retardancy

Borates change the oxidation reactions in the combustion of cellulosic materials to cause the formation of carbon residue. This charring action forms a barrier to combustion and diverts the decomposition products that would alternatively smolder. *Polybor* is particularly effective in reducing the flammability of cellulosic materials, including treatment of wood, cellulose insulation, and cotton batting used in mattresses.

Polybor can be added as a dry powder in engineered wood products such as particleboards or fiberboards or it can be used in an aqueous solution to pressure treat solid lumbers.

Corrosion inhibition

Incorporated in aqueous and non-aqueous systems requiring corrosion inhibition, lubrication, or thermal oxidative stabilization and used in the manufacture of water treatment chemicals.

Industrial cleaning products

Incorporated in many industrial and institutional cleaning compounds to aid in the emulsification of oils and as a soft abrasive. When combined with polyhydroxyl compounds, *Polybor* is also used as an additive in polishes and waxes.

Solubility

Solubilities at the temperatures in the table are under equilibrium conditions. *Polybor* readily dissolves in cool water to give supersaturated solutions with high boron concentrations.

Solubility in water, as $\text{Na}_2\text{B}_8\text{O}_{13} \cdot 4\text{H}_2\text{O}$	
Temperature °C (°F)	% by weight
0 (32)	2.5
10 (50)	4.5
20 (68)	9.7
30 (86)	21.9
40 (104)	27.4
50 (122)	34.3
60 (140)	40.7

pH

Aqueous solutions of *Polybor* range from mildly alkaline at low concentrations to approximately neutral at higher concentrations.

pH	
% by weight in saturated solution	pH @23°C (73°F)
1%	8.5
2%	8.4
5%	8.0
10%	7.6
15%	7.3



Stability

Shows little tendency to cake except after prolonged storage or if it becomes severely wetted by rain or substantial water penetration which can lead to crystallization of sodium pentaborate. It is also capable of absorbing moisture if exposed to a humid environment. When storing the product, maintain package integrity.

Containers

22.7 kg (50 lbs) and 25 kg (55 lbs) multi-wall paper bags with a polyethylene moisture-resistant film barrier, and IBCs

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 Day 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.

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