



Polybor®

$\text{Na}_2\text{B}_8\text{O}_{13} \cdot 4\text{H}_2\text{O}$
Disodium Octaborate Tetrahydrate

CAS Number 12280-03-4

Polybor® is a multi-functional boron product with a general application in both industrial and consumer products. *Polybor* is a mild alkaline salt consisting of a fine white powder that is readily soluble in water. *Polybor* dissolves even in cool water to give supersaturated solutions with high boron concentrations.

Applications and benefits

Flame proofing

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. Applications include treatment of wood composites, cellulose insulation, and cotton batting used in mattresses.

Corrosion inhibition

Polybor is incorporated in aqueous and non-aqueous systems requiring corrosion inhibition, lubrication, or thermal oxidative stabilization and finds use in the manufacture of water treatment chemicals.

Cleaning products

Polybor is incorporated in many cleaning products to aid in the emulsification of oils and as a soft abrasive. When combined with polyhydroxyl compounds, *Polybor* can be used for viscosity control. *Polybor* is added to formulations to clean hard surfaces such as metals, glass, and ceramics. It is also used as an additive in hand cleaners, polishes and waxes, and industrial/institutional cleaning compounds.

Chemical and physical properties

Stability

Polybor 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. It is, of course, essential to maintain the integrity of the packaging.

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Hydrogen ion concentration

Aqueous solutions of *Polybor* show a slight decrease in pH with increasing concentration. Saturated solutions are nearly neutral.

<i>Polybor</i> ® (wt.)	pH @ 23°C (73°F)
1%	8.5
2%	8.4
5%	8.0
10%	7.6
15%	7.3

Solubility in water, as $\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$

Temp °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



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