

Neobor® + Optibor® mixtures

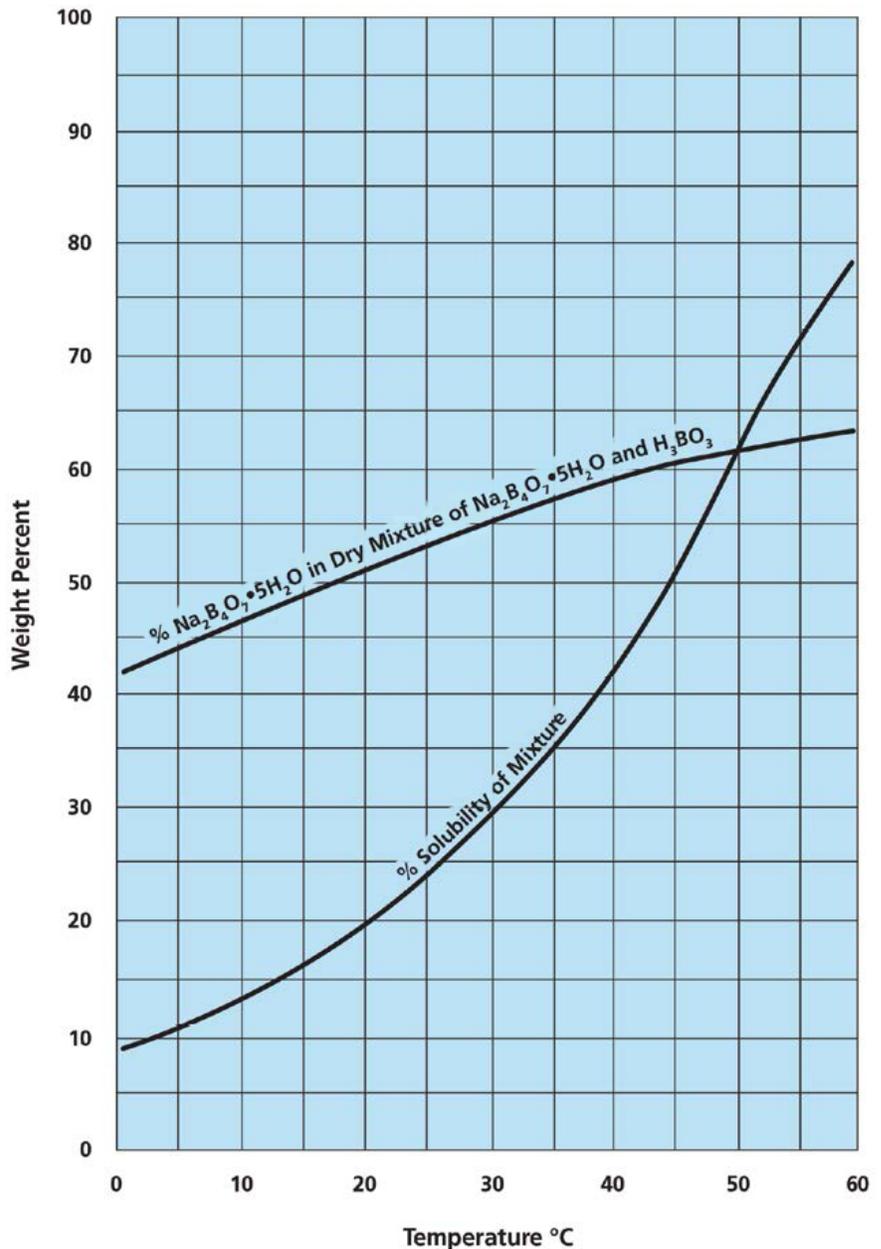
Maximum solubility based on typical analysis

Example explanation

To determine the solubility and composition of a mixture of *Neobor*® (borax 5 mol) and *Optibor*® (boric acid) at 30°C.

Proceed along the horizontal ordinate to 30°C. Read upward to the lower line labeled “% Solubility of Mixture,” and then across to where the vertical ordinate reads 30% by weight is given as the maximum solubility.

To determine the ratio of the two components at this temperature and at this solubility, proceed along the horizontal ordinate to the 30°C temperature as above and read upward to the top line which gives the composition of the mixture and then across. In this example, it reads that this mixture contains 57% *Neobor* and 43% *Optibor*.



# TECHNICAL BULLETIN

## Neobor and Optibor mixtures

### Solid mixtures based on typical analysis of technical grade products

Wt %		Mole ratios		Boric oxide content
Neobor	Optibor	Na <sub>2</sub> O/B <sub>2</sub> O <sub>3</sub>	B <sub>2</sub> O <sub>3</sub> /Na <sub>2</sub> O	Wt % B <sub>2</sub> O <sub>3</sub>
100	0	0.500	2.00	48.6
95	5	0.471	2.12	49.0
90	10	0.443	2.26	49.4
85	15	0.415	2.41	49.8
80	20	0.387	2.58	50.1
75	25	0.360	2.78	50.5
70	30	0.334	3.00	50.9
66.67	33.33	0.316	3.16	51.2
65	35	0.308	3.25	51.3
60	40	0.282	3.55	51.7
55	45	0.257	3.90	52.04
53.71	46.29	0.250	4.00	52.1
50	50	0.232	4.32	52.4
46	54	0.212	4.72	52.7
45	55	0.207	4.84	52.8
43.60	56.40	0.200	5.00	52.9
40	60	0.183	5.48	53.2
36.70	63.30	0.1667	6.00	53.44
35	65	0.1586	6.306	53.57
33.33	66.67	0.1506	6.639	53.70
30	70	0.1349	7.413	53.96
25	75	0.1117	8.953	54.34
20	80	0.08870	11.27	54.72
15	85	0.06607	15.14	55.10
10	90	0.04374	22.86	55.49
5	95	0.02172	46.04	55.87
0	100	0.0	Infinity	56.25

#### 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.



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