



Dehybor®

in steel slag stabilization



Steel slags have a variety of compositions and, after cooling, take various forms. Most steel slags form hard rock-like materials upon cooling. However some slags, principally those from the production of stainless steel, form dusty powders.

Steel slags with a basicity weight ratio (CaO/SiO_2) of 1.5 or higher have a property whereby the dicalcium silicate ($2\text{CaO}\cdot\text{SiO}_2$) undergoes a transformations as it cools. This forms a dusty slag material (see top of diagram).

These dusty slags can be prevented with addition of boric oxide (B_2O_3) as a slag modifier to the system, which creates a $\beta\text{C}_2\text{S}$ polymorph form. $\beta\text{C}_2\text{S}$ has a similar density to $\alpha'\text{C}_2\text{S}$, resulting in a stable rock-like material (see bottom of diagram).

Description and dose rate

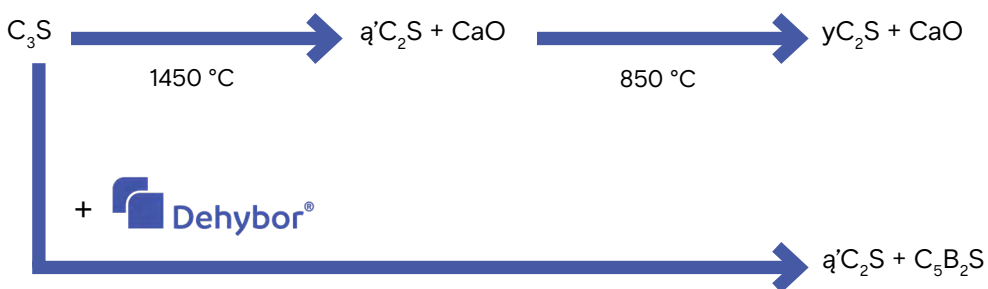
- *Dehybor*® is a ~69% B_2O_3 anhydrous borate product containing ~31% Na_2O
- One 25 kg bag of *Dehybor* per ton of slag (optimization recommended)

Benefits in slag

- *Dehybor* offers a low melting point (750°C)
- Sodium oxide levels help reduce viscosity of the slag
- Fine glassy particles enables rapid melting
- More complete mixing of borate
- No risk of explosion (virtually no steam generation) due to water

Value to you

- Less slag dust
- Easier to handle slag in the plant
- Revenue from saleable slag
- Savings on landfill taxes and disposal costs
- Savings on slag treatment costs
- Reduction in regulatory oversight due to better housekeeping practices
- Better community relations



C = CaO / S = SiO_2
 C_3S = Tricalcium silicate

C_2S = Dicalcium silicate
 $\text{C}_3\text{B}_2\text{S}$ = Calcium borosilicate

BROCHURE: DEHYBOR IN STEEL SLAG STABILIZATION

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.