



Product Summary Sheet

Firebrake® Products

Firebrake® ZB

Firebrake® ZB-Fine

Firebrake® ZB-XF



A unique zinc borate that combines the optimum effects of zinc and borate compounds and the effect of water release for fire retardant applications. *Firebrake®* ZB is stable at processing temperatures up to 290°C and is widely used both in halogen-containing and in halogen-free formulations for flame retardancy and smoke suppression.

It is offered in 3 grades: standard, fine, and extra fine (XF). The fine grades are recommended for applications where maximum fire test performance is needed and physical properties such as film-forming and adhesion are critical. The extra fine grade is suitable for even more stringent condition as its top-size is controlled to ensure it does not include any particles greater than 12 microns.

Firebrake® 500



An anhydrous form of *Firebrake®* ZB that offers similar fire performance and smoke suppression as *Firebrake®* ZB for applications where processing temperatures are up to 500°C and no water evolution is permitted. Typical applications of *Firebrake®* 500 are in nylons, polyetherketones, polysulfones, fluoropolymers, and polyesters.

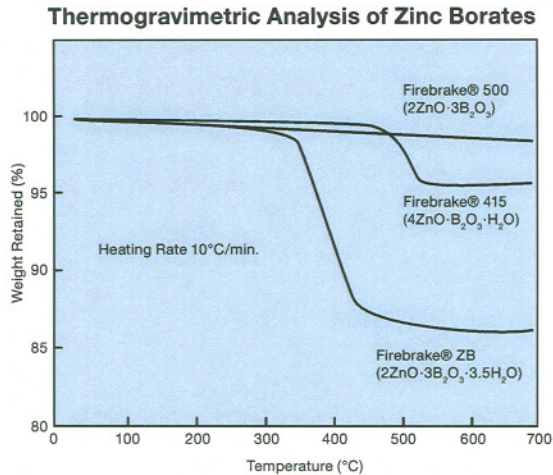
Firebrake® 415



A patented zinc borate product with the combined benefits of higher zinc to boron ratio and water release effect during combustion. *Firebrake®* 415 is suitable for high processing temperatures as its crystalline water is stable up to 415°C. Its extremely low tendency to absorb surface moisture is suitable for processing conditions sensitive to water release. Typical applications of *Firebrake®* 415 are in nylons, polysulfones, and other polymers requiring high processing temperatures. *Firebrake®* 415 is also an excellent smoke suppressant for systems such as flexible PVC.

Stability of Firebrake® Products

The following figure shows the range of stability of *Firebrake*® products at polymer processing temperatures. The figure also shows the low tendency of these products to release surface moisture during processing. *Firebrake*® 500 offers the highest range of thermal stability, *Firebrake*® 415 has the lowest moisture release feature up to about 415°C, where it starts releasing the crystalline water.



About Rio Tinto Minerals

Rio Tinto Minerals is the acknowledged world leader in developing industrial minerals – building blocks for life, and for products that contribute to better living – and in developing solutions to build its customers' businesses.

The organization counts world leaders in borate, talc and salt supply and science among its 3,000 employees, and sets the industry standard for product quality, supply reliability, technical support and service. Consistent product quality is secured through rigorous testing protocol and ISO 9000 registration of Rio Tinto Minerals' quality management systems.

About borates

Borax 20 Mule Team borates are naturally occurring minerals that have an excellent reputation for safety when used as directed. Borates are essential nutrients for plants, part of a healthy diet for people, and key ingredients in fiberglass, glass, ceramics, detergents, fertilizers, wood preservatives, flame retardants and personal care products.

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Notice: Although the data listed are typical, they are not production specifications. To obtain exact production specifications, contact Rio Tinto Minerals. The data presented are based upon tests that Rio Tinto Minerals believes to be reliable and are offered in good faith as typical of normal production, but Rio Tinto Minerals makes no warranty or representation of any kind, express or implied, regarding the information given or the product described, including any warranty of suitability for a particular purpose.