Buckman™
Chemistry, connected.

BUTROL 9119

Setting the standard in flame retardant innovation for paints and coatings

BUTROL 9119 is a fire retardant and smoke suppressant powder additive for paints and coatings, free from any heavy metals. It is derived from pure mineral, naturally sourced calcium metaborate, formulated with specific granulometry and fine particles to ensure maximum performance. BUTROL 9119 can be easily incorporated into your paint and coating formulations.

Proven flame resistance with BUTROL 9119 – exceptional performance for superior protection

Fire retardant performance - lab studies

A Leneta Chart (300 µm thick) was treated with different paint formulations and left to dry for 48 hours. It was then subjected to a flame test, exposed to a flame at 45 degrees for 30 seconds. The test was conducted by Synthos S.A. labs, leveraging years of experience and providing reliable trend analysis and result interpretation.

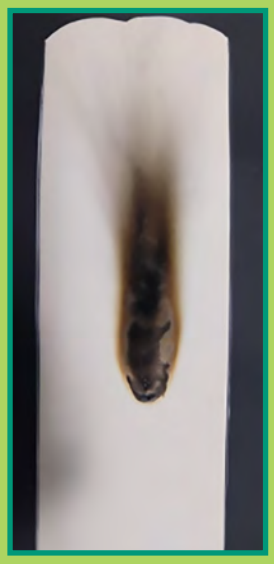
Blank
No flame retardant

Severe surface destruction with melting and hole formation.

Aluminum Hydroxide

Moderate protection, slight surface damage, no fire but some combustion.

BUTROL 9119



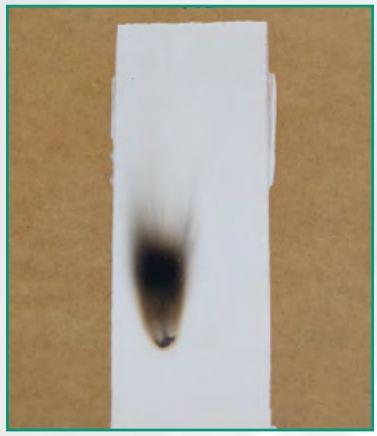
Superior protection, minimal charring, no surface damage or cracking.

- Blank (No Flame Retardant): severe burn damage was observed as expected. The surface was completely destroyed, with significant melting of the chart, and a hole was formed, leading to extreme surface degradation.
- Aluminum Hydroxide: moderate protection with mild surface damage. There is charring and burn damage, along with some destruction of the surface, however no fire was observed. Some combustion occurred, and the protection was insufficient to completely prevent chart damage.
- BUTROL 9119: superior fire protection. The burn area is notably smaller, with minimal charring. The reduced flame spread and limited surface damage suggest superior fire retardant properties. BUTROL 9119 effectively limited both flame spread and surface damage, confirming its strong fire retardant performance, making it a more effective solution compared to the other formulations.

Additional lab testing on fire retardant performance

A pinewood board was treated with paint containing BUTROL 9119 (see below the formula).

The results show no breaks, cracks, or surface destruction. There was no wood burning beneath the paint, and the carbon layer remained intact. Only slight smoke residue was observed, with no flame.



BUTROL 9119 mode of action

BUTROL 9119 contributes to flame resistance by melting below flaming temperatures and resolidifying in the form of a solid foam (char) that acts as a barrier between the substrate and the flame. As a result, borates will cause a decrease in smoke evolution. In addition, it is theorized that borates form a strong alkali that degrades cellulose, producing nonvolatile carbonaceous materials and decreasing the amount of flammable tars in the burning area.

Borates also provide resistance to flameless combustion, referred to as afterglow, particularly in coatings containing halogen compounds. The reduced afterglow has an important secondary benefit of reduced toxic fumes. BUTROL 9119 can be used as a permanent fire-resistant agent due to its low water solubility, ensuring long-lasting protection without the risk of leaching.

Example of Flame Resistant Paints Formulation

Here is a paint formulation developed with the usage of BUTROL 9119.

Function	Weight g/kg	Material
Water	341.25	
Acrylic-vinyl dispersion	228	SINEXIL OB
FLAME RETARDANT	145	BUTROL 9119
Silica filler	125	
Aluminium hydroxide	92	
Titan oxide	45	
Dispersing agent	14.5	
Antifoam agent	3.5	
Defoamer	3.5	
Cellulosic thickener	0.9	
Biocide in-can	0.9	
Thickener	0.45	

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