

## FLAME RETARDAND: FR – FS11

### Description

FR-FS11 is a high-performance flame retardant specifically engineered for use in PVC and SBR (Styrene-Butadiene Rubber) applications. In flexible PVC formulations, 1.0 to 1.25 parts per hundred resin (PHR) of FR-FS11 can effectively replace 1.0 PHR of Antimony Trioxide ( $Sb_2O_3$ ), delivering equivalent flame retardancy without compromising mechanical or electrical properties.

### Applications and Features

#### Applications

- PVC wire & cable compounds
- PVC synthetic leather
- PVC tarpaulin
- SBR-based products
- Other formulations utilizing  $Sb_2O_3$  as a flame retardant synergist

#### Key Features

- Superior flame retardant performance
- Maintains mechanical and electrical integrity
- Excellent cost-effectiveness

### Typical Application: PVC Cable Compounds

Components	Sb2O3 Basis	At 1:1 Ratio Substitute by FR - FS11	At 1:1.2 Ratio Substitute by FR - FS11
SG-3	100	100	100
DOTP	50	50	50
CaCO <sub>3</sub>	22	22	22
Kaolin	8	8	8
CPE	7	7	7
Stabilizer	5	5	5
ATH	3	3	3
Zinc Borate	6	6	6
Sb <sub>2</sub> O <sub>3</sub>	4	-	-
2000B	-	-	-
FR-FS11	-	4	4.8
Total	205	205	205.8
Test Item	Performances		
LOI (%)	30	28.8	30.2
Tensile Strength (MPa)	17.43	17.4	17.71
Elongation At Break (%)	337.12	337.34	335.12
Congo Red Time (min)	92.2	92.1	92.3
ohm ( $\Omega \cdot m$ )	$1.389 \times 10^{11}$	$1.371 \times 10^{11}$	$1.718 \times 10^{11}$

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### Remarks

- At a 1:1 replacement ratio with  $\text{Sb}_2\text{O}_3$ , FR-FS11 exhibits a slightly lower oxygen index (by 1.2 units), while other properties remain comparable.
- When used at 1.2 PHR, FR-FS11 delivers mechanical properties similar to  $\text{Sb}_2\text{O}_3$ , with a slight improvement in volume resistivity.

### Disclaimer

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### Regulatory Notes

This product is manufactured in compliance with applicable regional chemical control regulations. Regulatory status may vary by jurisdiction, and users should verify compliance with local requirements prior to use. Certification for specific applications (such as food contact, potable water, medical, or electrical uses) is not implied and must be confirmed separately upon request. Users are responsible for ensuring that the product, its additives, and any processing aids meet all relevant regulatory and end-use obligations.

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