

Kemgard[®]

Flame Retardant • Smoke Suppressant

- **Patented Molybdate Technology**
- **Robust Organic Char Former, Lowering Heat and Smoke Release**
- **Cost-Effective Alternative and Efficacy vs. Ammonium Octamolybdate (AOM)**
- **Alternative to Antimony Oxide**

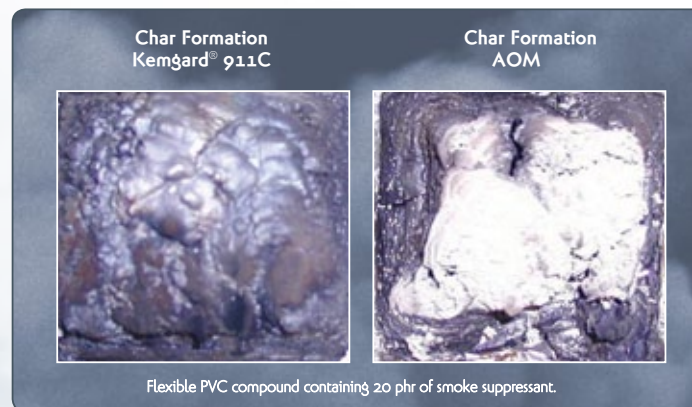


FIRE RETARDANT ADDITIVES

We've got the ideal solution to improve flame retardance and smoke suppression in your next electrical or industrial formulation. It's the broad line of cost-effective and high-performing Kemgard[®] flame retardants and smoke suppressants from Huber Engineered Materials.

Kemgard fire retardant additives influence the formation of a robust organic char, effectively insulating the polymer from the heat and oxygen source thereby lowering heat and smoke release.

Kemgard[®] Flame Retardants and Smoke Suppressants Lower Smoke Generation by Robust Char Formation



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Along with our high performing Kemgard[®] products comes unsurpassed technical expertise and customer service and our unique consultative selling process. Our technical and sales teams work in conjunction so your application situations and requirements are met, ensuring the right Kemgard product is recommended.

For more information about our Kemgard products and to order samples, contact us:

Call: 866-JMHUBER (866-564-8237)

Click: kemgard.com or hubermaterials.com/kemgard

Email: hubermaterials@huber.com



Kemgard® Flame Retardants and Smoke Suppressants: The Perfect Alternative for AOM and Antimony Oxide

Kemgard® Products Provide Lower Smoke for Flexible PVC Systems

NBS Smoke	Control	AOM	Kemgard® grades		
			911C	911A	HPSS
Optical density after 90 seconds	53	32	22	20	23
Optical density after 4 minutes	224	144	115	112	110
Maximum optical density	345	260	243	258	214
Limiting Oxygen Index (LOI)	40	42.5	43	44.5	45

ASTM E662 Flaming Mode; 58 phr Alumina Trihydrate (ATH) and 2 phr Antimony Oxide

Replacing Antimony Oxide with Kemgard® HPSS in Flexible PVC

	NBS Smoke (D Max)	LOI
Sb ₂ O ₃ =4	210	42
Sb ₂ O ₃ =2 Kemgard® HPSS=5	178	40
Sb ₂ O ₃ =0 Kemgard HPSS=5	162	36
Sb ₂ O ₃ =0 Kemgard HPSS=10	106	38

ASTM E662 Flaming Mode; 50 phr ATH and 20 phr Magnesium Hydroxide (MDH)

- ✓ Kemgard® HPSS reduces smoke when replacing antimony oxide.
- ✓ Partial antimony oxide replacement with Kemgard HPSS yields a balance of smoke generation and LOI.

Huber's Key Kemgard® Product Offerings

Kemgard Products (White powder appearance)	Physical Properties		Description	Applications							
	Median particle size, microns	Specific gravity		Rigid PVC	Flexible PVC	Epoxy	Polyamide	Adhesives, caulks and sealants	Wallpaper	Wire and cable	Carpet backing
Kemgard® 425	2.6	3	Calcium molybdate zinc complex	●	●	●		●	●		
Kemgard® 501	3.7	2.9	Calcium molybdate complex	●	●	●		●	●	●	
Kemgard® 911A	2.7	3	Calcium molybdate zinc complex	●	●			●	●	●	
Kemgard® 911B	2.3	5.1	Basic zinc molybdate compound		●		●	●	●	●	
Kemgard® 911C	3.3	2.8	Zinc molybdate / Magnesium silicate complex	●	●	●	●	●	●	●	●
Kemgard® 981	4.4	4.2	Basic zinc phosphate complex	●		●	●	●	●		●
Kemgard® 1100	2	2	Zinc molybdate / Magnesium silicate complex	●	●	●	●	●		●	
Kemgard® HPSS	2.3	3.5	Basic zinc molybdate / Magnesium hydroxide complex		●				●	●	●
Kemgard® MZM	2	2.6	Zinc molybdate / Magnesium hydroxide complex	●			●	●	●		
Kemgard® 700Z	2.5	3	Zinc molybdate / Zinc borate complex		●		●			●	

Kemgard® flame retardants and smoke suppressants are manufactured by patented processes in which molybdates are precipitated on an inert core. This "coated core" approach makes more efficient use of the molybdate species by maximizing the active surface area, and at a much lower cost than pure molybdate chemicals, such as ammonium octamolybdate (AOM). Molybdates can also be used in combination with other ingredients to replace antimony oxide.

Formulators can utilize Kemgard products to replace AOM or partially replace antimony oxide to achieve desirable smoke suppression performance while not only

reducing costs, but also minimizing regulatory concerns over antimony oxide use.

As compounders search for environmentally-friendly replacements for antimony oxide and halogenated additives, Kemgard flame retardants and smoke suppressants also work well with blends of both alumina trihydrate (ATH) and magnesium hydroxide (MDH) to help achieve your target levels of flame retardance and smoke generation. Huber offers an array of ATH and MDH products that compliment the Kemgard technology in creating the ideal product formulation and solution for your application.

Kemgard Technical Papers

Huber offers technical papers offering guidance in using its Kemgard® flame retardants and smoke suppressants. The following are available upon request:

Molybdate / Borate Complexes for Enhanced Cable Compound Fire Performance
60th International Wire and Cable Symposium, 2011

Fire Performance Synergies of Metal Hydroxides with Metal Molybdates in Antimony-Free Flexible PVC
SPE Vinyltec, 2010

Enhanced Flame Retardant Performance Enabled by Magnesium Hydroxide and Metal Molybdates in EVA Wire and Cable Compounds
Earned the Jack Spergel Memorial Award for Outstanding Technical Paper,
58th International Wire and Cable Symposium, 2009

Synergies of Metal Hydroxides and Metal Molybdates in Low-Smoke Flexible PVC
57th International Wire and Cable Symposium, 2008

