

Conventional flame retardant systems (Antimony/Halogens/Borates)

Excellent performances

Harmful profile for Health and Environment

Sb₂O₃

- H351-Suspected of causing cancer

Zinc Borate

- H361-Muthagenic and reprotoxic
- H411-Toxic for the acquatic life with longlasting effects

Chlorinated short chain paraffins

- H351
- H410

Chlorinated medium chain paraffins

- H362
- H410

VEAFLAME: *effective and sustainable option for fire protection*



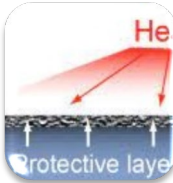
VEAFLAME grades do not have any risk phrases related to health and environmental concerns



Granular shape: easy to handle, easy to dose even into a continuous process



Halogen and Antimony free synergistic blend



Highly effective in char promoting: «*Heat Induced Surface Protection*» strategy

AVAILABLE GRADES

VEAFLAME 13

- Extremely effective in char promoting. Low interaction with foaming. Recommended for solid rubber.

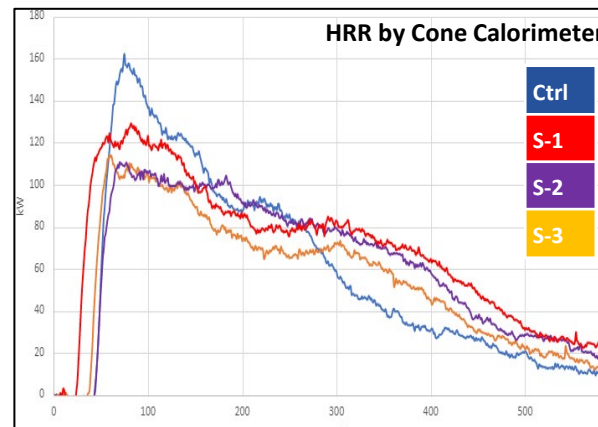
VEAFLAME 30

- Enhanced by an intumescent effect. Particularly suitable when a delayed ignition is required

VEAFLAME in NR damping compound

- The original compound is retarded by using a conventional system (Sb/Halogen)
- The trials have been carried out by using VEAFLAME as drop in agent and as replacement for the Antimony oxide

	Halo/Sb system	Sb free system	VEAFLAME 13	VEAFLAME 30
Ctrl	✓			
S-1	✓		10 phr	
S-2	✓		5 phr	5 phr
S-3		✓	10 phr	



VEAFLAME as drop in agent

S1-VEAFLAME 13				S2-VEAFLAME 13+30			
HRR Peak	Smokes	MAHRE	LOI	HRR Peak	Smokes	MAHRE	LOI
-18%	-26%	-8%	+1,0%	-31%	-26%	-18%	+1,7%

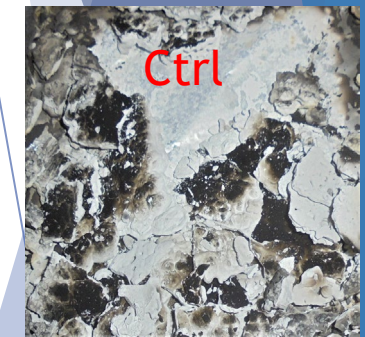
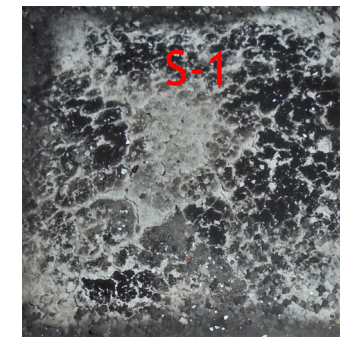
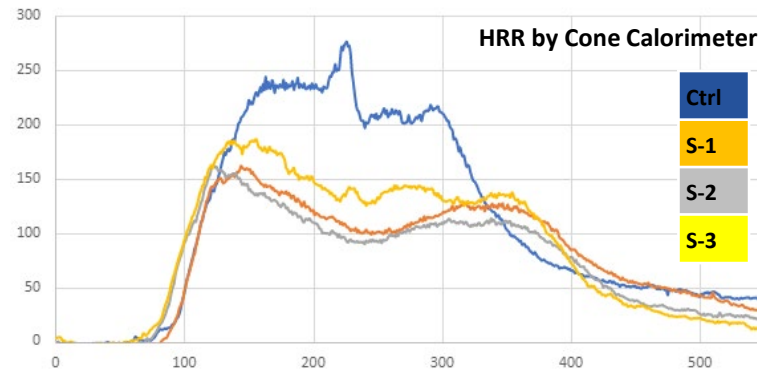
VEAFLAME as Sb replacement

S3-VEAFLAME 13			
HRR Peak	Smokes	MAHRE	LOI
-31%	-26%	-18%	+1,5%

VEAFLAME in EPDM Cable Compound

- The original compound is retarded without halogen and Antimony oxide
- The trials have been carried out by using VEAFLAME as drop in agent

	Halo/Sb free system	VEAFLAME 13	VEAFLAME 30
Ctrl	/		
S-1	/	10 phr	
S-2	/	5 phr	5 phr
S-3	/	4 phr	

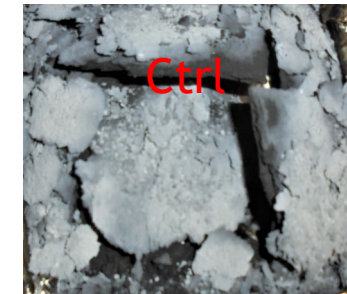
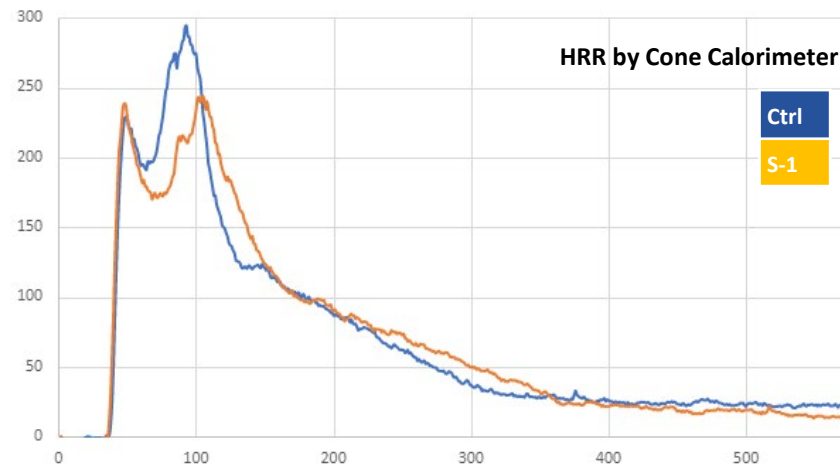


VEAFLAME as drop in agent								
S1-VEAFLAME 13			S2-VEAFLAME 13+30			S3-VEAFLAME 13 low dosage		
HRR Peak	Smokes	LOI	HRR Peak	Smokes	LOI	HRR Peak	Smokes	LOI
-41%	-7,5%	+2,0%	-41%	-7,5%	+1,3%	-33%	-4,3%	/

VEAFLAME in Shoe soles

- The original compound is retarded without halogen and Antimony oxide
- The trials have been carried out by using VEAFLAME as drop in agent

	Halo/Sb free system	VEAFLAME 13
Ctrl	✓	
S-1	✓	5 phr



VEAFLAME as drop in agent	
S1-VEAFLAME 13	
HRR Peak	LOI
-17%	+1,2%

Conclusions

- VEAFLAME showed high activity to reduce the HRR and the smokes in all the tested compound
- By using VEAFLAME the char formation on the surface of the burning sample was fast and its structure looked dense, hard and compact
- VEAFLAME can be used together with the conventional HALO/Sb systems to enhance the flame reatrdant properties of the article or alone to develop a Halo free compound.
- The use of Aluminum trioxide is always suggested to enhance the synergy with VEAFLAME.