

***Cray Valley Products for Accelerated Sulfur Vulcanization***

Cray Valley has recently developed new cure technologies for accelerated sulfur vulcanization. Many of the compounds valued for their role as coagents in peroxide cure also provide benefits in sulfur systems. While the chemistry is quite different, many liquid monomers, liquid polymers, and metallic monomers can improve the processing, cure state, and final properties in sulfur cured applications. Below is a brief survey of the products we offer as functional additives for sulfur cured applications.

As in peroxide cure, Cray Valley products can influence crosslink formation both during cure and post-vulcanization. **SR709**, a zinc salt of methacrylic acid, can function to activate cure, providing excellent improvements in crosslink density and a degree of reversion and compression set resistance when utilized as a component of conventional and semi-efficient sulfur systems. **SR709** is unique in that not only is crosslink density increased, but this product also imparts prolonged scorch safety. When used in place of zinc oxide as the cure activator, a reduction in overall zinc loading can be obtained.

**SR534D**, a specially-developed multifunctional acrylate, provides excellent anti-reversion properties. Unlike other available anti-reversion agents, **SR534D** has minimal effects on optimally-cured properties. Additional, non-sulfur crosslinks are formed primarily during conditions that would normally result in reversion. **SR534D** can be used as a drop-in additive and the compounder can expect little or no reformulating. In addition, **SR534D** does not contain amine groups, and should not negatively affect wire adhesion.

Our liquid polymer products have been utilized in the sulfur-cure market for quite some time. The **Ricobond** line of maleated polymers can co-cure in sulfur systems and improve the adhesion of your compound to polar substrates such as fabric and metal. The **Ricon** line has enjoyed application as reactive plasticizers and can replace aromatic oils as processing aids, improving the durability of the vulcanizate. **Ricon** products are available in a wide array of viscosities and micro-structures so that you can optimize performance in your application.

Product	Description	Benefits
SR 709	Zinc Monomethacrylate Activator for Sulfur Cure	Improved scorch safety and crosslink density
SR 534D	Multi-functional Acrylate Anti-Reversion Agent	Activity only under reversion conditions
	Phenylenedimaleimide Secondary accelerator	Provides additional non-sulfur crosslinks
Ricobond® 1031, 1731, 2031	Liquid Polymers Adhesion Aids	Co-cures with sulfur network
Ricon® 130, 131, 153, 154, 100	Liquid Polymers Reactive Plasticizers	Improves processing and final properties

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