

***Maleinized Polybutadiene  
Compatibilizers, Adhesion Promoters,  
Crosslinkers, and Tougheners***

Ricon® is the trademark of Cray Valley Company for its line of liquid 1,2 polybutadiene resins (PBD). Ricon® products encompass a very large and diverse array of resins with 1,2 vinyl content varying from 30% to 90%. The viscosities range from 750 centipoise @25°C to 250,000 @45°C. Molecular weights range from 1400 to 15,000. A variety of these polymers are then reacted to provide for anhydride functionality which is referred to as maleinized polybutadiene (PBDMA). The reacted maleic anhydride loses its unsaturation during the grafting reaction and becomes succinic anhydride. The trademark for this class of products is Ricobond®.

These grafted polymers (PBDMA) in addition to curing through unsaturation can undergo all the

traditional anhydride reactions. These materials react readily with hydroxyl and amine (primary and secondary) containing compounds to form polyesters and polyamides. These grafted polymers also react with epoxies, but because of the PBD chain, also toughen the epoxy system.

A third property of the grafted polymer is that it is dipolar. The anhydride (succinic) ring is very polar relative to the PBD chain. This property has been exploited by using these grafted polymers as a compatibilizer in polymer alloys. The grafted polymer also promotes adhesion between dissimilar polymers (e.g. EPDM to nylon). When the grafted polymers are added to many elastomers such as EPDM, they enhance adhesion to materials such as metals and fibers. So significant is the adhesion that a patent has been awarded involving grafted polymers in a vulcanized system to promote adhesion.

Product	Viscosity @25°C poise	Anhydride Equivalent Wt.	%Styrene	%Maleic Anhydride
Ricon® 130MA8	65	1,226	0	8
Ricon® 130MA13	265	754	0	13
Ricon® 130MA20	350**	490	0	20
Ricon® 131MA5	150	1,961	0	5
Ricon® 131MA10	480	981	0	10
Ricon® 131MA17	500*	577	0	17
Ricon® 131MA20	1000**	490	0	20
Ricon® 156MA17	1400**	577	0	17
Ricon® 184MA6	1700*	1,634	30	6

\*@45°C \*\*@55°C

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## Reactions of Grafted Polymers (PBDMA)

