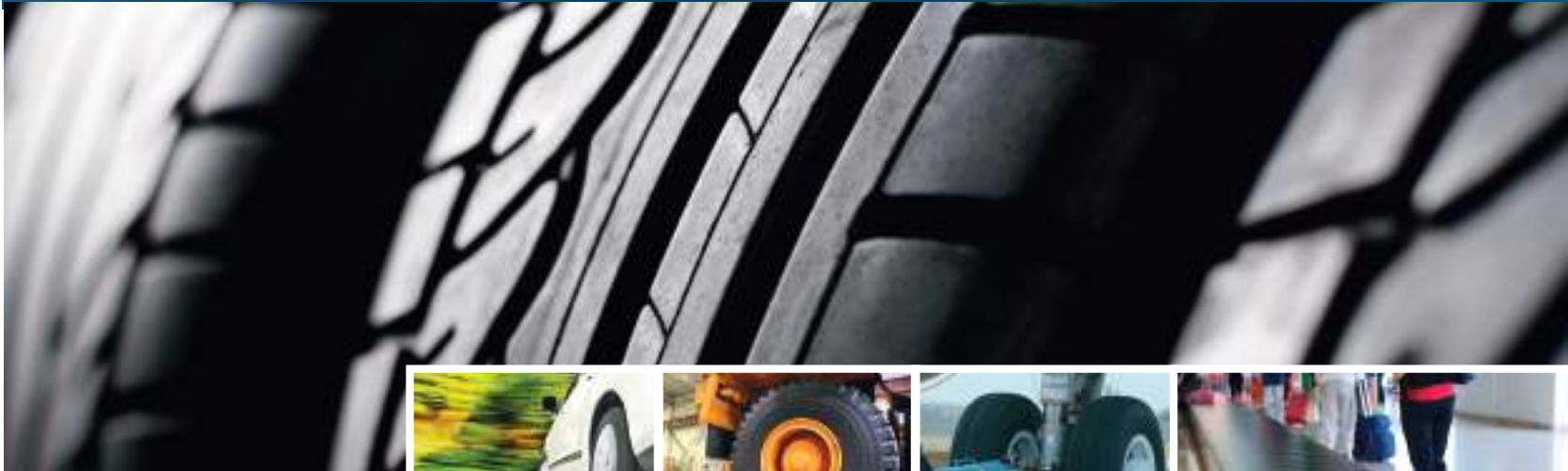


Amino and Phenolic Resins
Americas • Europe • Asia (Outside Greater China)



RESINS FOR THE TIRE AND RUBBER INDUSTRY

Resins for the Tire and Rubber Industry

Innovative Technology

Allnex offers an industry-leading line of environmentally friendly coating resins and additives to customers worldwide. Allnex has a broad range of technical resins including two co-reactant resins, ALNOVOL® and CYREZ®, specifically designed for the needs of the tire industry that are also used in related industries by rubber compounders.

ALNOVOL Resins for Tire Compounding

Allnex has profound expertise in phenolic resins extending back to the development of phenolic chemistry in the 1950s and the subsequent production of a well-rounded and widely-respected line of phenolic and functionalized resins for tire compounding.

Today, Allnex is drawing on that expertise to provide ALNOVOL functionalized phenolic resins, which offer tire manufacturers an effective replacement for problematic adhesion systems. These have long been the industry standard for steel-and textile-cord bonding applications. Environmental advantages and odor issues were the driver for this development.

These new resins allow/bring significant cost savings thanks to a lower adhesion promoter system cost.

Available globally, ALNOVOL resins are manufactured in Wiesbaden, Germany and are supplied in a variety of package sizes.

CYREZ Resins for Adhesion Promotion and Crosslinking

CYREZ resins are among the industry's best known performance compounds used by major tire producers worldwide. The resins function either as an adhesion promoter for steel cord in the breaker compound or as crosslinker material in various applications.

Allnex pioneered the development of melamine resins (HMMM-Hexamethoxy methyl melamine) that extended their use in tire compounds. CYREZ resins can be supplied either as a liquid resin or powder blend on a silica carrier. CYREZ resins are manufactured at five plants worldwide: Kalamazoo, Michigan, USA; Wallingford, Connecticut, USA; Lillestrøm, Norway; Botlek, Netherlands; and Shimonoseki, Japan.

Product Name	Reinforcement	Cord Adhesion Promoter	HMMM Hardener
ALNOVOL PN 160	•		
ALNOVOL PN 320	•		
ALNOVOL PN 760		•	
ALNOVOL VPN 1132	•		
CYREZ 963 FAMILY		•	•
CYREZ 964 FAMILY		•	•
CYREZ CRA FAMILY		•	•
ALNOVOL UF 410	•	•	

Product Range

Products	Characteristics	Dynamic viscosity 50% in MP ¹ [mPas] DIN 53177 23°C	Softening Point Ring & Ball [°C] DIN EN ISO 4625-1 5°C/min	Content of Free Phenol [%] DIN EN ISO 8974	Properties	Uses
Reinforcing Resins						
ALNOVOL PN 160	Modified non-self-curing phenol novolac	700-1100	101-113	<1.0	Suitable for reinforcing natural rubber, styrene butadiene rubber, EPDM rubber and nitrite rubber	Reinforcement of rubber
ALNOVOL PN 320	Non-self-curing phenol novolac	1400-2200	108-120	<0.3	High viscosity, very low free phenol	Reinforcement of rubber
ALNOVOL VP1 1132	Modified non-self-curing phenol novolac	100-600	115-155	<1.0	High tear resistance	Reinforcement of rubber
Adhesion Promoter						
ALNOVOL PN 760	Functionalized phenol resin	800-1800	95-115	<1.0	Very good aging, improved adhesion, environmentally friendly	Textile and steel cord adhesion promoter
Products	Characteristics	Content of HMMM* Content of ash** [%]	Carrier Type	Properties	Uses	
Adhesion Promoter / Crosslinker						
CYREZ 963 FAMILY	Hexamethoxymethyl melamine resin	>98*	None	Low content of free formaldehyde	Curing agent for resorcinol and novolac resins	
CYREZ 964 FAMILY	Hexamethoxymethyl melamine resin	31-35**	Precipitated amorphous silica	Good flow ability, easily dispersible	Curing agent for resorcinol and novolac resins	
CYREZ CRA FAMILY	Hexamethoxymethyl melamine resin	24-28**	Precipitated amorphous silica	High loading, easily dispersible	Curing agent for resorcinol and novolac resins	
Products	Characteristics	Dynamic viscosity [mPas] DIN 53177 23°C	Appearance	Properties	Uses	
Others						
ALNOVOL UF 410	Carbamid resin	3500-13500	Liquid	Oil replacement, hardness improvement, low Mooney viscosity	Apex, bead, textile cord adhesion compounds	

¹MP: Methoxy propanol

Product availability can vary by usage location. Please contact your local Allnex representative regarding availability in specific countries and regions.

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