

TYPE

HMMM liquid

FORM OF DELIVERY (f.o.d.)

100 % clear liquid

USES

Crosslinker for adhesion promoting and reinforcing systems in rubber applications

PRODUCT DATA

The data are determined by our quality control for each batch (lot) before release.

Determined per batch:

Appearance ASTM E284

appearance	[clean and clear]	PASS
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Loss on Heating DIN EN ISO 3251

loss on heating (2 h - 125°C)	[%]	<= 4
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Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity (23°C)	[mPa.s]	3000-6000
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Free Formaldehyde BS-EN 1243-2011

content	[%]	<= 0.1
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Not determined continuously

(non-standard variations, limited data set)

Non-volatile Matter DIN 5561

Non-volatile (foil, 45 min - 45°C)	[%]	>= 98
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Viscosity ASTM D1545

Gardner Holt viscosity (25°C)	[mPa.s]	Y - Z2
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Water Content

Content (Karl Fischer)	[%]	<= 0.7
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Refractive Index

RI approx.		1.52175
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Not determined regularly

Density ASTM D1475-13

density (20°C) approx.	[g/m³]	1.195
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PROPERTIES AND USES

CYREZ-grades (HMMM) offer several advantages over the older hexa methylene tetramine (HEXA or HMT) system. CYREZ resins are not corrosive to steel cord, polyester cord or metal molds. This property is important when considering adhesion promoters. CYREZ resins are much more suitable as methylene donors, as opposed to HMT which produces ammonia. When used in conjunction with ALNOVOL® PN 760 or resorcinol, CYREZ resin offers the ultimate in rubber adhesion giving optimum bonding strength.

- No skin irritation
- No amine or ammonia by-product
- Better scorch protection than provided by HMT
- No corrosive effects on steel and brass/bronze coated steel
- Disperses readily
- Easy to inject

CYREZ-grades find wide application as a methylene donor in the "HRH" dry rubber adhesion systems for bonding rubber to organic cord and wire reinforcement materials. To improve adhesion as well as physical properties CYREZ-grades should be used together with silica in the compound.

Suggested levels of resin are:

CYREZ-grades	1.5 - 4 phr
ALNOVOL PN 760	1.5 - 3 phr
or	
Resorcinol	1,5 - 3 phr
or	
Resorcinol formaldehyde resin	2 - 4 phr

CYREZ-grades can be used in conjunction with methylene acceptors (ALNOVOL® PN 160 or ALNOVOL® PN 320) in rubber compounds to increase modulus, tensile, stiffness and hardness. A suggested range could be 5 to 15 phr. The ratio within this dosage should be ALNOVOL : CYREZ 7 : 3 (calculated on active).

STORAGE

CYREZ-grade resins have a shelf life of 1080 days from the date of manufacture when stored at temperatures below 35°C. Although low temperatures are not detrimental to stability, its viscosity will increase, possibly making the resin difficult to pump or pour. The viscosity will reduce again on warming, but care should be taken to avoid excessive local heat, as this can cause an irreversible increase in viscosity.

WARNING: CYREZ-grade resins may turn hazy when cold due to crystallization of hexa methoxy methyl melamine (HMMM). Warming will return the product to normal with no adverse impact on performance.

SAFETY AND HANDLING

Please consult the Safety Data Sheet (SDS) for safety, health, and environmental data available from allnex.