

Rhenocure® D/EG-C

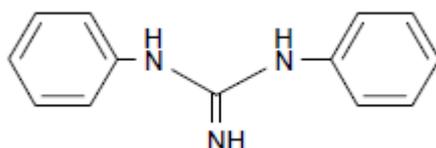
Specialty and Standard Chemicals

Function

Rhenocure® D/EG-C as the most popular accelerator of the guanidine class is suitable for NR, IR, BR, SBR, NBR and CR and also for polymer latices.

Product description

Composition: 1,3-diphenylguanidine (DPG)



Appearance: white to light pinkish granules, low dust
Density: approximately 1.2 g/cm³

<u>Property</u>	<u>Nominal value</u>	<u>Unit</u>	<u>Test method</u>
Melting point	≥ 145.0	°C	13 A (DSC)
Assay	≥ 96.0	%	ASTM D 5054
Oil content	1.5 ± 0.5	%	32 A
Ash content	≤ 0.30	%	ASTM D 4574
Volatile matter	≤ 0.30	%	18 R

Use

Application: Rhenocure® D/EG-C is the most popular accelerator of the guanidine class and is suitable for natural rubber NR, IR, BR, SBR, NBR and CR and also for polymer latices.

By itself, Rhenocure® D/EG-C is only employed in bulky rubber goods, e.g. solid tires, buffers, and roll covers. Its main use is as a secondary accelerator, primarily with mercapto accelerators in applications such as mechanical goods, tires, cables, rubber footwear, soles, heels and proofed fabrics, or with sulfenamides (e.g. Vulkacit® CZ) in silica-containing tire tread compounds.

Processing: Rhenocure® D/EG-C offers very good dispersion characteristics, despite its high melting point. It requires the use of zinc oxide. Stearic acid has a retarding effect. Mechanical properties of compounds are impaired if fatty acids are employed in excess of 1 phr.

When used as the sole accelerator, Rhenocure® D/EG-C requires high sulfur levels (about 3 phr) and yields a slow onset of cure with an unfavorable flow time/curing time ratio and plateau. It requires long curing times and is not suitable for "low sulfur cures".

The main use of Rhenocure® D/EG-C is as a secondary accelerator primarily for mercapto accelerators (such as Vulkacit® Merkpto and Vulkacit® DM), providing a high degree of crosslinking and reversion resistance. Curing behavior can be varied widely from a slow to rapid rate of cure. In conjunction with other accelerators such as sulfenamides (Vulkacit® CZ), thiurams (Rhenocure® TMTD/C) and dithiocarbamates (e. g. Rhenocure® ZDEC) compounds are more prone to reversion and in the latter two cases also yield insufficient scorch resistance for many applications. Retardation can be effected by Vulkalent® G, Vulkalent® E, and acidic substances.

The use of Rhenocure® D/EG-C (in combination with other accelerators) is necessary to obtain good mechanical properties of compounds loaded with light-colored fillers (e. g. silica).

In latex compounds Rhenocure® D/EG-C must be incorporated in the form of a water-based dispersion.

Dosage: Typical levels of addition based on 100 parts by weight of elastomer are:

	Application		Rhenocure® Additional D/EG-C		Sulfur Accelerator	
NR	Mechanical goods	a)	1.0 - 1.5			2.5 - 4.0
		b)	0.2 - 1.0	0.7 - 1.5	Vulkacit® Merkpto or DM	1.5 - 3.0
	Tire carcass	a)	0.1 - 0.2	0.6 - 0.8	Vulkacit® CZ	2.0 - 2.4
		b)	0.1 - 0.2	0.8 - 1.0	Vulkacit® DM	2.8 - 3.0
	Tire tread (silica)		2.0	1.7	Vulkacit® CZ	1.4
	Rubber footwear	a)	0.2 - 0.4	0.9	Vulkacit® Merkpto	2.0 - 2.5
		b)	0.1 - 0.2	0.2 - 0.4	0.3 Vulkacit® DM Vulkacit® Thiuram	1.8 - 2.4
	Roll covers		0.3 - 1.0			4.0 - 12.0
Fast combination e.g. for microwave cure		1.0 - 2.0	1.0 - 2.0	Vulkacit® Merkpto Vulkacit® CZ	0.8 - 2.5	
SBR	Mechanical goods	a)	0.2 - 0.8	1.0 - 1.5	Vulkacit® Merkpto	1.5 - 2.5
		b)	0.4 - 0.8	1.2 - 1.5	Vulkacit® DM	2.0 - 3.0
	Fast combination e.g. for microwave cure		1.4	1.4	Vulkacit® CZ 1.0 Rhenocure® ZDEC	1.2
NBR	Oil-resistant, molded goods	a)	0.4	1.5	Vulkacit® DM	1.5 - 2.5
		b)	0.2 - 0.6	0.8 - 1.5	Vulkacit® CZ	1.8 - 2.5
CR	Mechanical goods	a)	0.7 - 1.5	0.7 - 1.5	Rhenocure® Thiuram MS	0.7 - 1.5
	Cable, fabric proofing	b)	0.3 - 1.0	0.3 - 1.0	Rhenogran® ETU	0 - 1.0
Latex			0.5 - 1.0			

Vulcanizate Properties: Rhenocure® D/EG-C does not bloom when used at the recommended levels, but may cause a brownish discoloration when exposed to light. It imparts a slight bitter taste to rubber goods and a weak odor that dissipates with time.

Vulcanizates containing Rhenocure® D/EG-C as the sole accelerator have a poor resistance to aging and high compression set values. In combination with other accelerators, especially mercapto accelerators, excellent mechanical properties and good resistance to aging are attained.

Packaging

20 kg paper bag on 500 kg skid.

Storage stability

In original closed containers under cool (approximately 25 °C) and dry conditions 730 days from date of production.

Handling

For additional handling information on Rhenocure® D/EG-C please consult current safety data sheet.

These raw material properties are typical and, unless specifically indicated otherwise, are not to be considered as delivery specification.

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