

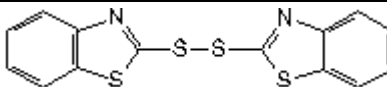


NOCIL LIMITED

PILCure® MBTS
 ACCELERATOR

Chemical Name 2-2'-Dithiobis(benzothiazole) (MBTS)

Chemical Structure



CAS Reg. No. 120-78-5

Mol. Wt. 332

Product Specification

<i>Parameter</i>	<i>Limits</i>	<i>Test Method</i>
Product form	Powder (OT)	-
Colour	Cream	-
Assay (Titration), % (min)	94.0	D 5051
Free MBT, % (max)	1.0	D 5044
Melting Point (Initial), °C (min)	170.0	D 1519
Melting Point (Final), °C	172 - 179	D 1519
Heat Loss, % (max)	0.4	D 4571
Ash, % (max)	0.5	D 4574
Paraffinic Oil (<0.2% PCAH) %	1.0 - 2.0	NOCIL G-40
Residue on 150 µm sieve, % (max)	0.05	D 5461
Residue on 63 µm sieve, % (max)	0.30	D 5461

Typical Data

Specific gravity at 25°C	1.54	D 1817
Bulk density, kg/m ³	430-470	NOCIL G-44
Bulk density (Comp), kg/m ³	510-550	NOCIL G-44

Product Information

Solubility	Soluble in chloroform. Slightly soluble in acetone and carbon tetra chloride. Insoluble in water.
Classification	Semi ultra fast accelerator.
Discoloration & Staining	Non-discoloring and Non-staining.
FDA Approval Status	Regulated for use in articles in contact with food under FDA 21 CFR 177.2600, 175.105 and BgW XXI, Categories 1-4.
Toxicity Data (Please refer to the latest Toxicological information.)	Practically non-harmful. (Oral LD ₅₀ rat over 5000 mg/kg). Not a skin or eye irritant.
Handling & Personal Protection	Ensure good ventilation and avoid creating dusty atmosphere. In case of eye or skin contacts wash out with clean water for 5 to 10 minutes.
Storage	Store at room temperature in a cool, dry and well ventilated place. Avoid exposure of the packaged material/product to direct sunlight & heat.

Packaging

Paper / Paper -Fabric Bag	20 kg
FIBC	500 kg
Storage Life	36 months

COMPOUNDING INFORMATION:

Pilcure MBTS is a semi-ultra fast accelerator for NR, SBR, BR NBR and other highly unsaturated rubbers. It readily disperses in rubber compounds and acts as a retarder for CR based compounds (depending on type of CR used). Pilcure MBTS is a retarder of cure in rubber compounds accelerated using thiurams (TMTM/TMTD) class accelerators as main accelerator and reduces bloom of thiurams to a great extent.

Pilcure MBTS has a long curing range and is safer than Pilcure MBT at rubber compound processing temperatures. Pilcure MBTS is very active above curing temperature of 140°C giving flat curing characteristics to 'polyisoprene' rubbers (e.g. NR). Pilcure MBTS accelerated compounds exhibit very good tensile and resilience properties when used in combination with other booster accelerators.

Normal dosages of Zinc oxide and Stearic acid are necessary for Pilcure MBTS accelerated cure systems. Pilcure MBTS based cure systems can be activated by using small proportions of DOTG, DPG, TMTM, TMTD, ZDC, etc. to improve the rate and the state of cure with a compromise on scorch, reversion and ageing resistance particularly when dithiocarbamate boosted accelerator systems are used.

If required, Pilcure MBTS based cure systems can be retarded using Pilgard PVI or other acid retarders. The response of Pilgard PVI to thiazole class accelerators is somewhat sluggish as compared to its effectiveness with sulphenamide class accelerators. Pilcure MBTS can safely be used to produce non-discoloring and non-staining rubber products and is particularly recommended for rubber to metal bonded products.

Pilcure MBTS shows more retarding effect as compared to Pilcure MBT in IIR based compounds (e.g. butyl tubes/extrusions, etc.) and serves as an oxidizing agent for GMF/dibenzo GMF to form nitroso groups for rapid cross linking of diene rubbers. Pilcure MBTS is also used in the compounds based on halogenated butyl rubbers.

Pilcure MBTS dosages are kept below 3.0 phr level to avoid bloom of thiurams/ dithiocarbamates in EPDM based rubber compounds.

APPLICATIONS:

Pilcure MBTS / its combinations with booster accelerators are used in NR, SBR, SBR-NR / BR blends, NBR, IIR, EPDM, and other synthetic rubber based compounds used for the manufacture of motor cycles and scooter tyres, butyl tubes, cycle tyre and tubes, beltings, retreading materials, footwear, hot air cured products and miscellaneous molded and extruded products.

TYPICAL DOSAGES OF PILCURE MBTS							
Product	Rubber	Accelerator / Sulphur, phr					
		MBTS	MBT	MOR	TMTD	ZDEC	S
Motor Cycle, Scooter Tyre Treads	NR-SBR / BR	1.0-1.2**	-	-	0.1-0.2	-	2.2-2.75*
	IIR	0.3-0.4	-	-	1.0	0.0-0.2	1.5
Auto Tubes	BIIR	0.5	-	-	-	0.10	0.5
	NR-RR	0.8-1.0**	-	-	0.1-0.2	-	2.2-2.5
Cycle Tyre Treads	NR-BR	1.0-1.2**	-	-	0.1-0.2	-	2.2
	NR	1.0-1.2**	-	-	0.2-0.3	-	2.5-3.0
Casing	NR	0.80**	0.2	-	0.0-0.15	-	2.75*
	SBR	1.2-1.5**	-	-	0.1-0.20	-	2.0
Transmission Belts							
General Purpose	NR	0.3	-	0.8	-	-	3.0
Heat Resistant	NR	0.4	-	-	2.0-2.5	-	0.3
V Belts							
Base	NR	0.2	-	0.6**	-	-	3.0
Cushion	NR	0.4	-	0.6**	-	-	2.4
Retreading Materials							
Cushion-Hot Cure	NR	0.2	-	0.7**	-	-	2.4*
Cushion-Cold Cure	NR	0.6	0.4	-	TMTM-0.2	-	2.4*
Vulcanizing Solution	NR	1.2	-	-	-	-	4.0*
Footwear							
DV Soles	NR-SBR	0.7	0.3	-	0.1-0.2	-	2.2
Microcellular Soles	NR-SBR	0.6	-	-	0.1-0.2	-	2.2
Neolite Soles	NR-SBR	0.7	0.3	-	0.1-0.2	-	2.5
Hot Air Cured Products							
Rubberized Fabric and Rubber Sheeting	NR	0.4	0.4	-	-	0.3	2.5
Cables	NR	1.0	-	-	TMTM	-	1.2
	SBR	1.6	-	-	0.3	-	1.0
Misc. Molded and Extruded Products	NR	0.8-1.0	-	-	0.0-0.2	-	2.4
	SBR	1.2-1.5	-	-	0.0-0.2	-	2.2
	NBR	1.2-1.5	-	-	0.0-0.2	-	1.5
	EPDM	3.0	-	-	0.75	ZDBC 1.5	0.5
Pilcure MBTS is also used in following compounds / products							
- Chlorobutyl Inner Liner (Bias Tyres) : MBTS-0.75 + Alkyl phenol disulfide-1.2 + ZnO-5.0							
- Bromobutyl Inner Liner (Radials): MBTS-1.25 + ZnO-3.0 + S-0.4							
- Bromobutyl OTR Tubes: MBTS-1.2 + TMTD-1.7 + ZnO-4.0							
- Bromobutyl Tank Lining: MBTS-1.0 + TMTD-0.5 + ZnO-5.0 + S-0.5							
Note: * Insoluble Sulphur (100% active content basis)							
** Pre Vulcanization Inhibitor may be incorporated at 0.2-0.5 phr levels for desired scorch safety, ensuring compliance with vulcanizate properties.							