Knowledge in action

Synthetic Rubber & Rubber Chemicals

Portfolio Germany

NORDMANN

Welcome to the Nordmann Rubber Product Catalogue!

In the dynamic landscape of industrial materials, making informed decisions is essential. That‘s why we‘re pleased to present our comprehensive catalogue, designed to assist purchasers, developers, and engineers in their search for the perfect synthetic rubber and rubber chemicals.

Divided into three sections - Synthetic Rubber, Fillers and Rubber Chemicals - this catalogue serves as your compass in navigating the world of rubber specialties. Explore detailed descriptions, properties and discover the wide range of applications for each product. From available grades to technical specifications, we want to make sure you have all the information at your disposal.

We recognize that innovation never stands still, which is why our catalogue is a living document, constantly updated to reflect the latest development in the industry and our portfolio. You can be assured that you‘re accessing the most up to date and relevant information to take your projects forward.

Should you have any questions or require further insight, our dedicated Nordmann Rubber team is on hand to assist.

Thank you for choosing Nordmann. We‘re honored to be your trusted partner in rubber solutions and look forward to continuing our relationship.

Your Nordmann Germany Rubber Team

About the ISCC Plus certificate: With the globally recognized ISCC (International Sustainability & Carbon Certification) Plus certificate, companies can prove that they are using sustainable raw materials from biomass and/or recycled materials for the production of food and animal feed and/or for other technical, chemical and bioenergy applications, even in non-regulated markets. The ISCC Plus certificate ensures compliance with traceability requirements along the entire value chain.

Nordmann has made sustainability a key focus of its corporate strategy, thereby creating a basis for the holistic implementation of sustainable business practices.

Establishing sustainable and transparent supply chains is one of Nordmann‘s main areas of focus. As a distributor, we act as a link between suppliers and customers and play an interface role within the supply chain. As a co-creator, networker and knowledge supplier, we aim to make the entire product life cycle, from raw material extraction to production, use and recycling, traceable.

Certifications provide orientation and help to control compliance with standards beyond the direct sphere of influence and to make the commitment of companies credible to the outside world. By focusing on sustainability, we have decided to undergo certification according to ISCC PLUS in the area of mass balance certification.

We have also extended the ISCC PLUS certification to include our storage facility in Neuss/Germany, thus becoming a “Trader with storage”. This ensures that the entire storage chain is certified with regard to the mass balance. We are therefore prepared if you, as a supplier of Nordmann, also become certified.

With this certification, we aim to further expand our sustainable product portfolio and support our competitiveness.

If you have any questions, please contact:

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Synthetic Rubber

CR - Polychloroprene

Chloroprene (CR) is a synthetic rubber made of chloroprene monomers by way of an emulsion process involving radical polymerization. Some grades are modified with sulfur, some are pre-crosslinked. Different grades of CR are distinguished by their tendencies to crystallize. CR is used when applications require a special combination of different properties, such as:

Properties:

- Excellent resistance to weathering, UV radiation and ozone
- Good chemical resistance and certain resistance to non-polar oils
- Good dynamic properties, tear strength and low abrasion
- Low gas permeability
- Heat resistant, flame retardant
- Good electrical properties

Applications:

- Conveyor belts, hoses, V-belts, roller coatings
- Seals for construction and automotive applications
- Bridge bearings
- Coated fabrics, membranes
- Sportswear, protective gloves
- Cable sheathing

Chemical name: Polychloroprene
CAS Number: 9010-98-4

Hazards identification: Not classified as hazardous

Supplier: Resonac Europe GmbH (former Showa Denko)

RESONAC
Chemistry for Change

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Chips (for rubber)	Weight per container: 20 / 25 kg paper bags with PE inner layer Weight per pallet: 1,000 kg Pallet type: PE	12 months, CR GW 8 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks (often medium active) or kaolins
- Plasticizing oils
- Antioxidants (ODPA)
- Metal Oxides (MgO, ZnO)
- Sulfur accelerators

CR - Polychloroprene

1-1 General Purpose

Grade	Mooney Viscosity [ML 1+4. 100 °C]	Crystallization Rate	Other Characteristics
G Types (sulfur-modified group)			
GW	37-49	Slow	Sulfur-modified G type with better heat and compression set resistance than GN or GRT
W Types (basic group)			
W	42-51	Medium	Standard grade for general purpose
WHV	109-130	Medium	Higher-viscosity version of W for high-loading applications and general adhesives
WHV100	95-105	Medium	Lower viscosity version of WHV
W Types (crystallization-resistant group)			
WXJ*	42-51	Very Slow	Good low-temperature properties for general use
SND5*	67-76	Very Slow	Higher-viscosity version of WXJ
SND8*	32-37	Very Slow	Higher-viscosity version of WXJ
WRT	42-51	Extremely Slow	Excellent low temperature properties
W Types (extrusion & calendering)			
WB	42-51	Medium	Superior extrusion and calendering properties
WXK*	73-89	Very Slow	Good low-temperature properties and better extrudability
WXKT*	106-117	Very Slow	Higher-viscosity version of WX-K for high-loading use
SND37*	73-89	Very Slow	Version of WX-K with improved mold release and better extrusion properties
W Types (low mold-fouling group)			
WK*	42-51	Medium	Version of W with better mold release and good mill-/flowability
WXJK*	42-51	Very Slow	Version of WXJ with good millability and improved mold release
SND35*	63-73	Extremely Slow	Superior low temperature properties of WRT with improved mold release for injection molded goods
SND43*	78-88	Extremely Slow	Higher-viscosity version of SND-35 with less shrinkage
SND45*	60-73	Extremely Slow	Version of WRT with superior low temp. and brittleness temp. properties, also improved mold release for injection molded goods
T Types (specific group for extrusion & calendering)			
TW	42-51	Medium	Superior extrusion and calendering grade with good tensile properties
TW100	85-102	Medium	Higher-viscosity version of TW for high-loading use
SND22*	42-51	Very Slow	Good low-temperature properties with better extrudability
SND48*	85-100	Very Slow	Higher-viscosity version of SND-22 featuring better calenderability and extrusion ability with collapse resistance
TRT	42-51	Extremely Slow	Excellent low-temperature properties with better processability

*made to order

CR - Polychloroprene

1-3 Liquid Dispersions

Grade	Polarity	Solid content [%]	Polymer structure		Crystallization rate	Other charateristics
			Gel content	Homo/copolymer		
400	Anionic	50	Medium	Copolymer	Extremely fast	Ozone, weatherability
750	Anionic	50	Medium	Copolymer	Extremely slow	Flex, excellent elasticity
752	Anionic	50	Medium	Copolymer	Extremely slow	Flex resistance, elasticity (soft), very low modulus
753	Anionic	50	Medium	Copolymer	Extremely slow	Flex resistance, elasticity, accelerator-free
650	Anionic	60	Medium	Copolymer	Extremely slow	High-solids version of LD750
654	Anionic	59	Low	Copolymer	Low	Low modulus
842A	Anionic	50	High	Homopolymer	Very slow	High cure rate
671A	Anionic	59	Med-high	Homopolymer	Medium-slow	High wet-gel strength
AE101	Non-ionic	59	Med-high	Homopolymer	Medium-slow	Colloidal stability at low pH
572	Anionic	50	High	Homopolymer	Fast	Quick grab strength
571	Anionic	50	High	Homopolymer	Slow	General purpose, high cure rate
115	Non-ionic	47.5	Low	Copolymer	Slow	Carboxylated, hot bond strength
SD77S	Anionic	55	Sol (No gel)	Homopolymer	Very fast	Quick break for foam bonding
SD100	Anionic	55	Sol (No gel)	Homopolymer	Very fast	Excellent quick break properties for foam bonding
SND 57	Anionic	58	Sol (No gel)	Homopolymer	Medium	Tackiness, very low MW
SD78	Anionic	60	Med-high	Copolymer	Fast-medium	High pressure laminate wood

CM - Chlorinated polyethylene

Linear low-pressure polyethylene (LLDPE) becomes chlorinated when chlorine is put into an aqueous suspension in the presence of a radical former. Its main chain is fully saturated when chlorine content is between 25 and 45 % by weight. The best low-temperature flexibility is achieved when chlorine content is at 36 % (Tg: -22 °C, brittleness temperature: -40 °C). Typically used for rubber applications.

Properties:

- Good resistance to ozone, weathering and hot air (dry heat up to 150 °C)
- Oil resistance comparable to that of CR
- Suitable for producing flame-retardant articles with medium oil resistance

Applications:

- Cables
- Hoses
- Rollers

Chemical name: Chlorinated polyethylene
CAS Number: 64754-90-1

Hazards identification: Not classified as hazardous

Supplier: Weifang Polygrand Chemical Co., Ltd.

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Powder	Weight per container: 25 kg PP/EVA bags alternatively big bags: 500 kg, 550 kg, 600 kg, 700 kg Weight per pallet: 1,400 kg Pallet type: Wood	24 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks or kaolins
- Ester plasticizers
- Peroxides and coagents (to increase crosslink density)
- MgO as an acid scavenger for heat stabilization

CM - Chlorinated polyethylene

Product specifications

Specifications	CPE135A	MF2032*	MF2035*	CM3080	CM3650	CM3665
Appearance	White powder					
Chlorine content [%]	36±1	32±1	35±1	30±1	36±1	36±1
Heat of fusion [J/g]	≤2.0	≤20	≤20	≤1.5	≤1.5	≤1.5
Residue on sieve (0.8mm Sieve) [%]	≤2.0	≤2.0	≤2.0	≤2.0	≤2.0	≤2.0
Apparent density [g/ml]	≥0.5	≥0.48	≥0.48	≥0.42	≥0.42	≥0.42
Hardness [Shore A]	≤60	≤65	≤65	≤65	≤55	≤55
Tensile strength [MPa]	≥8	≥8	≥8	≥8	≥8	≥8
Elongation at break [%]	≥700	≥700	≥700	≥700	≥700	≥700
Mooney viscosity [ML(1±4) 125 °C]	-	-	-	80±5	50±5	65±5
Ash content [%]	≥4.5	≥4.5	≥4.5	≥4.5	≥4.5	≥4.5
Calcium carbonate [%]	5	5	5	5	5	5
Stable time [min]	≥8	≥8	≥8	≥8	≥8	≥8
Impurity particles [unit/200g]	≤20	≤20	≤20	≤20	≤20	≤20
Volatile matter [%]	≥0.3	≥0.3	≥0.3	≥0.3	≥0.3	≥0.3
Melt flow rate	-	6~9	6~9	-	-	-

*not standard grades

Product specifications

Specifications	CM3675	CM3680	CM3100*	CM3690	CM3055	CM4085
Appearance	White powder					
Chlorine content [%]	36±1	36±1	36±1	36±1	30±1	40±1
Heat of fusion [J/g]	≤1.5	≤1.5	≤1.5	≤2.0	≤1.5	≤1.5
Residue on sieve (0.8mm Sieve) [%]	≤2.0	≤2.0	≤2.0	≤2.0	≤2.0	≤2.0
Apparent density [g/ml]	≥0.42	≥0.42	≥0.42	≥0.42	≥0.42	≥0.5
Hardness [Shore A]	≤55	≤60	≤60	≤60	≤65	≤55
Tensile strength [MPa]	≥8	≥8	≥8	≥8	≥8	≥8
Elongation at break [%]	≥700	≥700	≥700	≥700	≥700	≥700
Mooney viscosity [ML(1±4) 125 °C]	75±5	80±5	85±5	90±5	55±5	90±10
Ash content [%]	≥4.5	≥4.5	≥4.5	≥4.5	≥4.5	≥4.5
Calcium carbonate [%]	5	5	5	5	5	5
Stable time [min]	≥8	≥8	≥8	≥8	≥8	≥8
Impurity particles [unit/200g]	≤20	≤20	≤20	≤20	≤20	≤20
Volatile matter [%]	≥0.3	≥0.3	≥0.3	≥0.3	≥0.3	≥0.3
Melt flow rate	-	-	-	-	-	-

*not standard grades

CSM - Chlorosulphonated polyethylene

CSM is made from different grades of PE. Weifang Polygrand uses a gas-solid phase method for the chlorsulfonation process. Its specially treated PE reacts with chlorine and sulphur dioxide to produce CSM. It has fully saturated main and side chains. Chlorine content varies between 24-43 wt % (36 % is typical) and sulfur content between 0.8-1.5 wt % (1.2 % is typical).

Properties:

- Very good resistance to ozone, weathering, and aging
- Good color stability for outdoor use
- Low fatigue cracking in dynamic applications
- Temperature range: -20 to 135 °C
- Flame retardant and often self-extinguishing

Applications:

- Cable sheathing
- Hose covers
- Coated fabrics (e.g. inflatable boats)
- Light rubber products

Chemical name: Chlorosulphonated polyethylene
CAS Number: 68037-39-8

Hazards identification: Not classified as hazardous

Supplier: Weifang Polygrand Chemical Co., Ltd.

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Granulate	Weight per container: 25 kg PP Weight per pallet: 1,000-1,400 kg Pallet type: Wood	24 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks (medium active) or kaolins (for colored products)
- Ester plasticizers
- Processing aids
- MgO as an activator and acid scavenger
- Sulfur and sulfur accelerators
- Peroxides and coagents (to increase crosslinking density)

CSM - Chlorosulphonated polyethylene

Product specifications

Specifications	Test method	Unit	CSM 403*	CSM 503	CSM 603	CSM 803	CSM 903	CSM S45
Chlorine content	GB/T 30290	[%]	35+2	35+2	35+2	35+2	35+2	25±2
Sulfur content	GB/T 30290	[J/g]	1.0-1.5	1.0-1.5	1.0-1.5	1.0-1.5	1.0-1.5	1.0-1.5
Volatile matter	GB/T 2914	[%]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	≤0.5
Tensile strength	GB/T 528	[MPa]	> 18	> 20	> 22	> 23	> 23	
Elongation at break	GB/T 528	[%]	> 250	> 250	> 250	> 250	> 250	
Mooney viscosity	GB/T 1232.1	[ML(1+4) 100 °C]	40-50	50-60	60-70	80-95	95-110	35-45

EPDM - Ethylene propylene rubber

Polymerized ethylene and propylene, usually in solution (hexane, pentane) using Ziegler-Natta or metallocene catalysts. Fully saturated main chain achieved through addition of ENB or DCPD as terpolymer. ENB crosslinkable with sulfur. As a copolymer and with DCPD, crosslinking by peroxide. Often blends of different EPDM types are used to adjust properties and processing qualities.

Properties:

- Good resistance to heat, ozone, UV and weathering (fully saturated hydrocarbon chain)
- Resistance to polar media (i.e. water, alcohols)
- Can be used over a broad range of temperature (cured with peroxides at up to 150 °C)
- Excellent electrical insulation properties
- Cost-effective compounding (accepts a high load of fillers)

Applications:

- Automotive: Door and window seals, break and cooling hoses, wiper blades, O-rings
- Construction/industrial: Window seals, flooring, cables, roofing sheets, hoses, O-rings, conveyor belts

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Chemical name: Ethylene-propylene-ethylidene-norbornene copolymer
CAS Number: 25038-36-2 (special types could differ)

Hazards identification: Not classified as hazardous

Supplier: Mitsui Chemicals Europe GmbH

MITSUI CHEMICALS EUROPE GMBH

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Granulate/bale	Weight per container: 25 kg bags/bales Weight per pallet: 625-750 kg/bags Weight per Box: 750-1,050 kg/bal	6 months after delivery	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks or kaolins
- Plasticizing oils
- Processing aids
- Activators, acid scavenger, moisture absorbers
- Sulfur and sulfur accelerators
- Peroxides and coagents (to increase crosslinking density)

EPDM - Ethylene propylene rubber

VNB-EPT

	PX-006M	PX-008M	PX-009M
Polymerizaion Catalys (dienes)	Metallocene (VNB)	Metallocene (VNB)	Metallocene (VNB)
ML (1+4) 125 °C	69	48	10 (100 °C)
Ehtylene Content [wt %]	60	60	60
Diene Content [wt %]	1.5	1.5	1.5
Oil extension [phr]	0	15	0

EBT

	K-8370EM	K-9330M
Polymerizaion Catalys (comonomers)	Metallocene (butene)	Metallocene (butene)
ML (1+4) 125 °C	50	30 (100 °C)
Ehtylene Content [wt %]	51	50
Diene Content [wt %]	4.7	7.1
Oil extension [phr]	30	0

Mitsui EPT

Characteristics		Grade	Mooney Viscosity		Ethylene Content (%)	Diene Content (%)	Oil Content (PHR)	Polymer Design *1	Bale		Packaging		Shipping
			ML(1+4) 125°C	ML(1+4) 100°C					Weight (kg)	Form	Wrapping *2	kg/ Steel Box	kg/20´ Container
Low Diene	Non-Oil Extended	**2060M**	40	-	55	-	2,3	Narrow	25	Standard	LDPE	1,050	16,800
Medium Diene	Non-Oil Extended	**3092M**	61	-	65	-	4,6	Narrow	25	Friable	LDPE, HDPE	750	12,000
		3110M	78	-	56	-	5,0	Narrow	25	Friable	LPDE, HPDE	750	12,000
	Oil Extended	**3062EM**	43	-	65	20	4,5	Narrow	25	Standard	LDPE, HDPE	1,05	16,800
									4,5	Friable	LPDE, HPDE	750	12,000
		3072EM	51	-	64	40	5,4	Narrow	25	Standard	LDPE, HDPE	1,050	16,800
									5,2	Friable	LDPE, HDPE	750	12,000
		3090EM	59	-	48	10	5,2	Narrow	25	Standard	LDPE	1,050	16,800
High Diene	Non-Oil Extended	**X-4010M**	-	8	54	-	7,6	Narrow	25	Standard	Low Melt POE	1,050	16,800
		4045M	-	45	45	-	7,6	Narrow	25	Standard	LDPE, HPDE	1,050	16,800
		8030M	-	32	47	-	9,5	Hyper Branched	25	Standard	LDPE, HDPE	900	14,400
		9090M	58	-	41	-	14,0	Branched	25	Standard	LDPE	900	14,400

Mitsui EPT Pellet Grades

Characteristics		Grade	Mooney Viscosity		Ethylene Content (%)	Diene Content (%)	Oil Content (PHR)	Polymer Design *1	Bale		Packaging		Shipping
			ML(1+4) 125°C	ML(1+4) 100°C					Weight (kg)	Form	Wrapping *2	kg/ Steel Box	kg/20´ Container
Medium Diene	Non-Oil Extended	**X-3012P**	15 (100°C)	5g/ 10min	72	3,6	-	Narrow	25	Pellet	Paper Bag	750	12,000
		3092PM	61	-	65	4,6	-	Narrow	25	Pellet	Paper Bag	750	12,000
	Oil Extended	**3072EPM**	51	-	64	5,4	40	Narrow	25	Pellet	Paper Bag	750	12,000

FKM - Fluoro rubber

FKM polymers are supplied as co-, ter- and tetrapolymers with varying levels of fluorine (between 65 and 71 %.) This means that FKM can be very precisely customized to meet individual requirements for media resistance and low-temperature flexibility.

Properties:

- Fluoro rubber can be used at temperatures ranging between -30 °C and 200 °C
- Fluoro rubbers can be supplied either as pre-compounds (crosslinking system integrated) or as base polymers (no crosslinking system included)
- Very good ozone and aging resistance
- High degree of media resistance in fuels, mineral oils and greases as well as in aliphatic and aromatic hydrocarbons

Fluoroelastomer properties compared to other rubbers

	Fluoroelastomer	Silicone rubber	Acrylic rubber	Nitrile rubber	Ethylene propylene rubber
	FKM	**MQ, VMQ**	**ACM**	**NBR**	**EPDM**
Specific gravity (raw gum)	1.8~2.0	1.0	1.0	1.0	0.9
Heat resistance	*****	*****	****	***	****
Low-temperature resistance	***	*****	****	*****	*****
Electrical properties	****	****	***	***	*****
Solvent resistance	*****	*****	****	***	****
Flame resistance	*****	****	**	**	**
Ozone resistance	*****	*****	*****	*	*****
Steam resistance	*****	****	*	***	****
Acid resistance	*****	****	***	****	*****
Oil resistance	*****	***	****	****	*
Permeability resistance	*****	**	****	****	***

***** Excellent, **** Good, *** Fair, ** Marginal, * Poor

Fluorine content and features

Properties	Fluoroelastomer	
	High content	Low content
Curing properties (except peroxide cure type)		Better
Compression set (except peroxide cure type)		Better
Low temperature properties		Better
Oil resistance	Better	
Chemical resistance	Better	
Corrosion resistance	Better	

FKM - Fluoro rubber

Applications:

- Seals in the automotive and commercial vehicle industries, oil production, chemical sector and aerospace
- FKM is used wherever high speeds and high temperatures occur in conjunction with aggressive media, e.g. in radial shaft seals for pumps and gearboxes.
- FKM can be used at temperatures between -30 °C and 200 °C. Special compounds/blends can be utilized at temperatures over 200 °C or below -30 °C under certain conditions. The specification of the low-temperature glass transition point is important for static applications.
- Under dynamic or high-pressure conditions, the low-temperature glass transition point sometimes shifts considerably in response to frequency or pressure.
- Examples of automotive applications: Fuel hoses, cylinder head gaskets, turbo charger hose, OPF/DPF particle filter sensor hoses, sealing rings, shaft sealing rings, O-rings (e.g. in quick connectors), intake manifold gaskets, pressure control diaphragms in oil separators
- Non-automotive application examples: Pressure equalization or buffer bladders (e.g. oil and gas), impellers (in impeller pumps, bipolar plate seals in fuel cells, filter plate diaphragms, stator pumps (oil and gas), cleaning pigs, jewelry and watch bands

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Chemical name:
1. Vinylidene fluoride-hexafluoropropylene copolymer
2. Vinylidene fluoride-tetrafluoroethylene-hexafluoropropylene copolymer
3. Fluoroelastomer (LT)

CAS Number:
1. 9011-17-0
2. 25190-89-0
3. 56357-87-0

Hazards identification: Depending on the type, classification differs

Supplier: DAIKIN CHEMICAL EUROPE GmbH

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Bales	Weight per container: Varies depending on polymerization plant Weight per pallet: Varies depending on polymerization plant Pallet type: Varies depending on polymerization plant	12 months after delivery	Cool and dry, no direct sunlight

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These may also interest you:

- Fillers such as carbon blacks (furnace carbon blacks, thermal carbon blacks, conductive carbon blacks) or barium sulphate (blanc fixe)
- Processing aids
- Metal oxides as acid scavenger
- Crosslinking systems
  - Diamines (rarely used)
  - Bisphenols
  - Peroxides and coagents (TAIC and TMAIC)

FKM - Fluoro rubber

DAIKIN Fluoroelastomers: DA-EL Orientation Map

FKM family	% F	BISPHENOL CURE Best heat & compression set resistance		PEROXIDE CURE Chemical resistance	
		Extrusion	Injection & compression	Extrusion	Injection & compression
Copolymer	66 %	G-704	G-7000, G-300 series: Low-viscosity grades (Several PC)	G- 8002 G-8002L*	G- 8002 G-8002L*
Terpolymer	66 %-67 %	G-671	G-667 (G-663BP)	G-962	G-962 G-964
	68 %-69 %	G-558 G-565			
	70 %-71 %	G-621	G-686 (G-684BP)	G-901 G-902 G-903	G-912 G-922 G-925
LT Low temperature	65 % (TR10=-30 °C)			LT-302	LT-304
	66 % (TR10=-25 °C)			LT-252	
BRE Base resistance	62 %				GBR-6002 GBR-6005

*not a standard grade

FFKM - Perfluoro rubber

Perfluoro rubbers or perfluoroelastomers are fully fluorinated elastomers. Chemically-speaking, FFKM is very similar to polytetrafluoroethylene (PTFE) and is most often utilized for applications that require very good thermal resistance and/or chemical resistance.

Properties:

- Perfluoroelastomers (FFKM) are supplied either as compounds that are ready for processing or as base polymers for in-house compounding.
- FFKM can be used at temperatures ranging from -20 °C to 325 °C. Special compounds/blends can be used at temperatures above 325 °C or down to -30 °C under certain conditions. The specification of the low-temperature glass transition point is important for static applications.
- Under dynamic or high-pressure conditions, the low-temperature glass transition point sometimes shifts considerably in response to frequency or pressure.

Applications:

- Seals made of FFKM are suitable for use at temperatures from -20 °C to 325 °C. They are used wherever extreme safety standards apply and for applications in which high maintenance and repair costs exceed the cost of the seals.
- Use can be found in the chemical industry, the oil producing and processing industry, power plant construction as well as in the aerospace industry.
- Other applications include seals and O-rings for chemical reactors, vacuum technology and semiconductor manufacturing.

Chemical name: Perfluoroelastomer
CAS Number: Not specified

Hazards identification: Not classified as hazardous

Supplier: DAIKIN CHEMICAL EUROPE GmbH

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Sheets	Weight per container: 2 kg in laminated foil bag Weight per pallet: Not applicable Pallet type: Not applicable	12 months after delivery	Cool and dry, no direct sunlight

FFKM - Perfluoro rubber

These may also interest you:

- Fillers such as carbon blacks (thermal carbon blacks) or barium sulphate (blanc fixe)
- Processing aids
- Metal oxides as acid acceptors
- Crosslinking systems
  - Peroxides and coagents
  - Imidazoles

DAI-EL PERFLUOR

Raw gum	Features & applications	Mooney Viscosity	Specific gravity [-]	TR10 [°C]	Temp range [°C]	Pre-compound	Full compound	
GA-15	**POx cure system** - Low-temperature flexibility - Cleanness same as FKM	25 [ML_{1+10} 100 °C]	2.0	-20	-15 to 200	-	GA-05	No fillers Transparent
							GA-55	MTC-filled Black compound
							GA-65	$BaSO_4SIO_2$-filled White compound
GA-105	**POx cure system** - Good mechanical properties - Excellent chemical and solvent resistance - Suitable for semiconductor applications	65 [ML_{1+10} 100 °C]	2.0	-2	RT to 200	-	GA-2557501	MTC Filled
GA-500	**Imidazole Cure** - High level of cleanliness - Better resistance to steam and amine than triazine cure type - Suitable for semiconductor applications	80 [ML_{1+20} 170 °C]	2	3	RT to 300	-	GA-5508002	MTC-filled Black compound

IIR - Butyl rubber

Butyl rubber is produced from isobutylene and small amounts of isoprene (0.5 to 2.5 mol %) in an aliphatic solution at -100 °C. Isoprene units are statistically distributed. Higher isoprene content increases crosslinking speed and density but remains slow compared to other diene rubbers. Glass transition temperature is low (-70 °C). Having low mobility in the polymer chain results in low elasticity, strong damping and low gas permeability. Butyl rubber cannot be blended with diene rubbers but can be combined with EPDM.

Properties:

- Vulcanizates have low air permeability
- Good heat, weather and ozone resistance
- Can be used across a wide temperature range, from -40 °C to 150 °C (depending on crosslinking)
- Good damping in a temperature range of -40 °C to 70 °C
- Resistant to polar media (e.g. solvents, alcohol, glycol)

Applications:

- Tubes for tyres, vacuum seals, membranes, NBC protection (suits, gloves)
- Heating bellows for tire production
- Adhesives, adhesive tapes, sealing compounds, sealing tapes
- Heat-resistant conveyor belts, steam hoses, boiler seals
- Wagon buffer springs, damping elements, dock fenders
- Pharmaceutical closures
- Hoses, and linings for chemicals

Chemical name: 1,3-butadiene, 2-methyl-, polymer with 2-methyl-1-propene
CAS Number: 9010-85-9

Hazards identification: Not classified as hazardous

Supplier: CENWAY MATERIALS Co., LTD

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Bales	Weight per container: 25 kg Weight per pallet: 1,050 or 1,200 kg Pallet type: Wood/steel	36 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks
- Plasticizing oils
- Processing aids
- Sulfur and sulfur accelerators

IIR - Butyl rubber

CIIR - Chlorobutyl rubber

When butyl rubber is dissolved in aliphatic solvents and reacts with chlorine, chlorobutyl rubber (CIIR) is formed. Its properties are generally comparable to those of butyl rubber, but CIIR can be co-vulcanized with other diene rubbers and its cure rate and speed are higher. CIIR also allows a greater variety of curing systems and improves heat resistance.

Properties:

- Vulcanizates have low air permeability and can be co-vulcanized with diene rubbers
- It can be used across a wide temperature range, from -40 °C to 150 °C (depending on crosslinking)
- Resistant to polar media (e.g. solvents, alcohol, glycol)

Applications:

- Primarily used for the inner layer of tubeless tires
- Pharmaceutical stoppers and closures
- Conveyor belts for hot materials, seals, hoses
- Hoses and linings for chemical materials

Chemical name: 1,3-butadiene, 2-methyl-, polymer 2-methyl-1-propene, chlorinated
CAS Number: 68081-82-3

Hazards identification: Not classified as hazardous

Supplier: CENWAY MATERIALS Co., LTD

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Bales	Weight per container: 34 kg Weight per pallet: 1,020 or 1,224 kg Pallet type: Wood/steel	24 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks
- Plasticizing oils
- Processing aids
- Sulfur and sulfur accelerators

IIR - Butyl rubber

BIIR - Bromobutyl rubber

When butylrubber is dissolved in aliphatic solvents and reacts with bromine, it forms bromobutyl rubber (BIIR). In general, its properties are comparable to those of butyl rubber but BIIR can also be co-vulcanized with other diene rubbers at a higher cure rate and speed. It also allows for a greater variety of curing systems and improves heat resistance. BIIR reacts faster than CIIR.

Properties:

- Vulcanizates have low air permeability and can be co-vulcanized with diene rubbers
- BIIR can be used in a wide temperature range of -40 °C to 150 °C (depending on crosslinking)
- Resistant to polar media (e.g. solvents, alcohol, glycol)

Applications:

- Primarily used for the inner layer of tubeless tires
- Pharmaceutical stoppers and closures
- Conveyor belts for hot materials
- Seals, hoses
- Hoses and linings for chemical materials

Chemical name: 1,3-butadiene, 2-methyl-, polymer with 2-methyl-1-propene, brominated
CAS Number: 68441-14-5

Hazards identification: Not classified as hazardous

Supplier: CENWAY MATERIALS Co., LTD

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Bales	Weight per container: 34 kg Weight per pallet: 1,020 or 1,224 kg Pallet type: Wood/steel	24 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks
- Plasticizing oils
- Processing aids
- Sulfur and sulfur accelerators

IIR - Butyl rubber

Grade list

Series	Grade	Mooney [ML(1+8) 125 °C]	Volatiles [wt-%]	Halogen content [wt-%]	Application
IIR	532	51 ±5	≤ 0.3		Inner tubes
	CB-01	51 ±2	≤ 0.3		Inner tubes
BIIR	2302	32 ±5	≤ 0.5	1.9 ±0.2	Inner linings
	2502	46 ±5	≤ 0.5	1.9 ±0.2	Inner linings
CIIR	1301	38 ±5	≤ 0.5	1.2 ±0.2	Inner linings Stoppers Sidewalls

NBR - Nitrile rubber

Nitrile rubber (NBR) is produced through the radical copolymerization of butadiene and acrylonitrile (ACN) in an aqueous emulsion. Depending on the temperature during polymerization, warm or cold polymers can be used. Warm polymers are utilized for adhesives, for example, while cold polymers are used for rubber applications (LG Chem = only cold polymers).

ACN content is normally between 15 and 50 wt %. Glass transition temperature with an ACN of 18 % is -38 °C, -2 °C with 50 % ACN. Typical ACN content: 18 %, 28 %, 34 %, 39 %. ACN is the polar fraction in NBR; the higher it is, the better the resistance to non-polar hydrocarbons (greases, oils, fuels) but with decreasing low-temperature flexibility.

Properties:

- Resistant to polar oils (depending on ACN content), fuels and greases

Applications:

- Used in diaphragms, hoses, conveyor belts, food contact products, printing blankets, insulating foams

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Chemical name: 2-propenenitrile polymer with 1,3-butadiene
CAS Number: 9003-18-3

Hazards identification: Not classified as hazardous

Supplier: LG Chem

Sold as:	Weight / Dimension:	Shelf life:	Special storage conditions:
Bales	Weight per container: 35 kg Weight per pallet: 1,260 kg Pallet type: Metal	18 months	Cool and dry, no direct sunlight; max. temperature of 30 °C

These may also interest you:

- Fillers such as carbon blacks, light-colored fillers
- Polar plasticizers
- Chlorinated paraffins
- Antioxidants
- Processing aids
- Activators
- Sulfur and sulfur accelerators
- Peroxides and coagents

NBR - Nitrile rubber

ISCC International Sustainability & Carbon Certification

LG Chem NBR type overview Grade list

Classification		ACN %	LG Chem	Mooney [ML (1+4) 100 °C]	Basic properties	FDA	Sold as
Low ACN	Base type	28	**NBR 7150**	50	Temperature flexibility and elasticity	X	35 kg bales
			NBR 2860	60			
	Fast cross-linking	28	**NBR 2875**	75			
Medium ACN	Base type	34	**NBR 6230***	30	Good processability and oil resistance		35 kg bales
			NBR 6240	40			
			NBR 6250	50	Good oil resistance, fillers absorption and elasticity		
			NBR 6260	60			
			NBR 6280	80		X	
	Molding type	34	**NBR 6840**	40	Good oil resistance, low mold contamination, good elasticity	X	
			NBR 6850*	50		X	

*not standard grades

Fillers

Carbon blacks

Carbon blacks are classic reinforcing fillers in the field of rubber. Below you will find details about our conductive carbon blacks and thermal carbon blacks.

Conductive carbon blacks

These are fillers for adjusting the electrical conductivity of elastomer components.

Ensaco products are very pure conductive carbon blacks that feature low PAH values and virtually no grit, delivering good dispersibility along with a variety of different surfaces and structures. They provide excellent electrical conductivity at comparatively low dosages.

Conductive carbon blacks from IMERYS Graphite & Carbon are produced using a proprietary manufacturing procedure called Timcal MMM Process. It differs from the widely known furnace process and involves burning high-purity specialty oils in a controlled manner.

Utilizing this type of manufacturing technology as well as high-purity feedstock make it possible to produce very pure carbon blacks with very low levels of sulfur, ash content and PAH content, as well as a low number of interfering ions.

Ensaco products are widely used in applications such as power cables, conveyor and transmission belts, rollers and anti-vibration systems.

Ensaco 250 G

Chemical name: Carbon blacks
CAS Number: 1333-86-4

Hazards identification: Not classified as hazardous

Supplier: IMERYS Graphite & Carbon

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Conductive carbon blacks with high structure and low surface area • BET surface area: 65 m²/g • OAN structure: 190 ml/100 g • Moisture (as packed): 0.1 % • Sieve residue at 45 µm 2 ppm • Sulfur: 0.02 % • Volume resistivity: Max. 10 Ohm*cm • High purity, low PAH-level	Sold as: Compacted Granulate Weight per container: 10 kg bag / 500 kg big bag Weight per pallet: 480 kg / 500 kg Pallet type: Other	Shelf life: 60 months Special storage conditions: Cool and dry

Carbon blacks

Conductive carbon blacks

Ensaco 260 G

Chemical name: Carbon blacks
CAS Number: 1333-86-4

Hazards identification: Not classified as hazardous

Supplier: IMERYS Graphite & Carbon

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Conductive carbon blacks with high structure and low surface area • BET surface area: 70 m²/g • OAN structure: 190 ml/100 g • Moisture (as packed): 0.1 % • Sieve residue at 45 µm 2 ppm • Sulfur: 0.02 % • Volume resistivity: Max. 5 Ohm*cm • More graphitized (slightly more conductive) and more shear stable than Ensaco 250 G • Ideal for applications involving high shear stress (e.g. printing rollers or transmission belts)	Sold as: Compacted Granulate Weight per container: 10 kg bag / 250 kg big bag / 500 kg big bag Weight per pallet: 480 kg / 500 kg / 500 kg Pallet type: Other	Shelf life: 60 months Special storage conditions: Cool and dry

Ensaco 350 G

Chemical name: Carbon blacks
CAS Number: 1333-86-4

Hazards identification: Not classified as hazardous

Supplier: IMERYS Graphite & Carbon

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Extra conductive carbon blacks with high surface area and high structure • BET surface area: 770 m²/g • OAN structure: 320 ml/100 g • Moisture (as packed): 1 % • Sieve residue at 45 µm 10 ppm • Sulfur: 0.02 % • Volume resistivity: Max. 20 Ohm*cm	Sold as: Compacted Granulate Weight per container: 7.5 kg bag Weight per pallet: 360 kg Pallet type: Other	Shelf life: 36 months Special storage conditions: Cool and dry

Carbon blacks

Thermal carbon blacks

Fillers with minor reinforcing effects on elastomer compounds. Thermal carbon blacks are also known as MT (medium thermal black) and are often used in FKM-compounds.

Thermax®

Thermal carbon blacks are mainly used for FKM and lining compounds. Extremely pure carbon blacks features relatively high PAH content due to water recycling in the production process. Thermal carbon blacks are produced with the help of natural gas. The difference between Thermax® N990 and Thermax® N991 is that Thermax® N991 is non-pelletized and therefore supplied as a powder. Thermax® N990 CG (CG = consumer goods) also has significantly lower PAH content, this is particularly suitable for applications for food contact or drinking water.

Grade	Description	Application
Thermax® N990	Standard medium thermal carbon blacks	Filler for rubber, plastics and concrete
Thermax® N991	Powdered grade of N990	Used in low shear mixing applications
Thermax® N907	Stainless grade of N990	Applications where there is potential for rubber parts to stain mating surface
Thermax® N908	Powdered grade of N907	See N907
Thermax® N990UP	Ultra pure grade of N990	Used in applications requiring low elemental impurities
Thermax® N991UP	Powdered grade of N990UP	See N990UP
Thermax® N908UP	Stainless, ultra pure grade of N991	See N990UP
Thermax® N990CG	Low PAH grade of N990	Used in applications required low PAH

Chemical name: Carbon blacks
CAS Number: 1333-86-4

Hazards identification: Not classified as hazardous

Supplier: Cancarb Limited

cancarb
TOKAI CARBON GROUP

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Used as additive/fillers in rubber and plastic products, a colorant, a heat-resistant additive and a carburizing and reducing agent • NSA 7-12 m²/g • OAN approx. 44 cm³/100 g	Sold as: Fine black powder (Thermax® N991) or pellets (Thermax® N990) Weight per container: 25 kg bag / 1,000 kg big bag Weight per pallet: 750 kg / 1,125 kg / 1,000 kg Pallet type: Other	Shelf life: Indefinite Special storage conditions: Cool and dry

Light-colored fillers

Apart from kaolins, we also distribute other white pigments such as titanium dioxide and zinc oxide. In addition to serving as reinforcing fillers that provide good mechanical properties and color stability, using light-colored fillers like these can also impact other material characteristics such as permeability or insulation in a positive way.

Kaolins

Kaolins are a naturally occurring mineral with a two-layer structure, defined as an aluminum silicate.
Our manufacturer's portfolio features a range of water-washed kaolins that can also be supplied in a calcined or surface-treated form.

Kaolins are a relatively low-cost and light-colored fillers that is popularly used to improve the dielectric properties of cable compounds. For many other applications as well, kaolins can be utilized along with other fillers to improve chemical resistance and permeation properties.

Light-colored fillers

Kaolins

Water-washed grades (hydrous clays)

Crude kaolins clay goes through several processing steps such as slurrying, grinding, centrifuging and drying.

Water-washed grades	45 µm sieve residue [%]	Particle size (median) [d50, µm]	Surface area – BET [m²/g]	Brightness (TAPPI) [% reflectance]	Bulk density (loose; tampered) [kg/m³]	pH value
Polyfil 35/35B	0.03/< 0.03	7.0	8	83	450;500	7
Polyfil 611	0.005	1.5	18	88	560;670	5
Polyfil F/FB	0.005	1.5	17	88	190;240 / 560;670	7
Polyfil X/XB	0.005	2.3	17	87	190;260 / 580;700	7
Polyfil HG	0.005	0.5	21	88	800;900	7
Polyfil HG 90	0.005	0.4	21	91	800;900	7
Polygloss 90	0.005	0.4	22	91	160;190	7

Chemical name: Kaolins
CAS Number: 1332-58-7

Hazards identification: Not classified as hazardous

Supplier: KaMin

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• White and semi-reinforcing fillers • Large range of particle sizes (0.4-7 µm) and BET surface areas (8-22 m²/g) • Ultrafine kaolins improves long-term durability (flex fatigue) vs. talc • Carbon blacks can be partially replaced with ultrafine kaolins • All KaMin kaolins contain less than 0.1 % respirable crystalline silica • To find out more about the properties of the available grades, please refer to the table	Sold as: White powder / B = spray-dried pellets Weight per container: From 25 kg bags to 500 to 1,000 kg big bags (different sizes upon request) Weight per pallet: Various Pallet type: Other	Shelf life: Indefinite when warehoused and stored properly Special storage conditions: Cool and dry

Light-colored fillers

Kaolins

Delaminated grades

Manufactured using a specific milling process that reduces the naturally found stacks of water-washed kaolins into thin individual kaolins platelets to provide improved barrier properties/reduced permeability

Delaminated grades	45 µm sieve residue [%]	Particle size (median) [d50, µm]	Surface area – BET [m²/g]	Brightness (TAPPI) [% reflectance]	Bulk density (loose; tampered) [kg/m³]	pH value
Polyfil DL	0.005	3.2	12	88	640;750	7
Polyfil DLX	0.005	6.7	12	88	640;720	7

Chemical name: Kaolins
CAS Number: 1332-58-7

Hazards identification: Not classified as hazardous

Supplier: KaMin

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Thin individual kaolins platelets provide superior barrier properties • All KaMin kaolins contain less than 0.1 % respirable crystalline silica • To find out more about the properties of the available grades, please refer to the table	Sold as: White powder Container weight: From 25 kg bags to 500 to 1,000 kg big bags (different sizes upon request) Weight per pallet: Various Pallet type: Other	Shelf life: Indefinite when warehoused and stored properly Special storage conditions: Cool and dry

Light-colored fillers

Kaolins

Surface-treated water-washed grades

Organofunctional silane treatment is employed to improve the reinforcement of water-washed kaolins for sulfur and peroxide-cured systems.

Water-washed grades	45 µm sieve residue [%]	Particle size (median) [d50, µm]	Surface area – BET [m²/g]	Brightness (TAPPI) [% reflectance]	Bulk density (loose; tampered) [kg/m³]	pH value
Nucap 100G	0.005	0.5	22	88	800;900	7
Nucap 190W	0.1	0.4	22	91	800;900	6
Nucap 290W	0.005	0.4	22	91	800;900	6
Nulok 390	0.05	0.4	22	91	800;900	8.5

Chemical name: Kaolins
CAS Number: 1332-58-7

Hazards identification: Not classified as hazardous

Supplier: KaMin

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Ultrafine, reinforcing kaolins • Nucap™: Mercapto silane for sulfur-cured systems • Nulok®: Amino silane for peroxide-cured systems • Increases cross-linking density while improving modulus and both tensile and tear strength • Better resistance to compression set (low hysteresis) and heat build-up • All KaMin kaolinss contain less than 0.1 % respirable crystalline silica • To find out more about the properties of the available grades, please refer to the table	Sold as: White powder Weight per container: From 25 kg bags to 500 to 1,000 kg big bags possible (different sizes upon request) Weight per pallet: Various Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry

Light-colored fillers

Kaolins

Calcinated grades

Heat-treated, water-washed kaolins with low loss on ignition, good dispersion and processing characteristics, and good electrical resistivity properties under wet and dry conditions.

Calcinated grades	45 µm sieve residue [%]	Particle size (median) [d50, µm]	Surface area – BET [m²/g]	Brightness (TAPPI) [% reflectance]	Bulk density (loose; tampered) [kg/m³]	pH value
Polyfil 70	0.005	3.2	8	91	370;450	6
Polyfil 80	0.01	3.2	8	92	370;450	6
Polyfil 90	0.005	1.5	16	93	220;400	6

Chemical name: Kaolins
CAS Number: 92704-41-1

Hazards identification: Not classified as hazardous

Supplier: KaMin

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Calcined kaolins imparts outstanding electrical resistivity properties under wet and dry conditions • Offers efficient processing, reinforcement and excellent color • Compounds extrude smoothly and reduce stickiness that occurs during processing • All KaMin kaolins contain less than 0.1 % respirable crystalline silica • To find out more about the properties of the available grades, please refer to the table	Sold as: White powder Weight per container: From 25 kg bags to 500 to 1,000 kg big bags possible (different sizes upon request) Weight per pallet: Various Pallet type: Other	Shelf life: Indefinite when warehoused and stored properly Special storage conditions: Cool and dry

Light-colored fillers

Kaolins

Surface-treated calcinated grades

Organofunctional silane treatment of calcinated kaolins for sulfur and peroxide-cured systems, used to improve reinforcement and wet electrical stability in cable applications.

Surface-treated calcinated grades	45 µm sieve residue [%]	Particle size (median) [d50, µm]	Surface area – BET [m²/g]	Brightness (TAPPI) [% reflectance]	Bulk density (loose; tampered) [kg/m³]	pH value
Nylok 171	0.01	3.2	8	91	370;450	8.5
Translink 37	0.02	1.4		90	320;560	
Translink 77	0.02	0.8		91	210;340	

Chemical name: Kaolins
CAS Number: 92704-41-1

Hazards identification: Not classified as hazardous

Supplier: KaMin

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Minimizes absorption of moisture • Improves electrical resistivity and durability properties in wet and dry conditions • Translink 37 and Translink 77 vinyl silane for peroxide-cured systems • Nylok 171 amino silane for sulfur-cured systems • All KaMin kaolins contain less than 0.1 % respirable crystalline silica • To find out more about the properties of the available grades, please refer to the table	Sold as: White powder Weight per container: From 25 kg bags to 500 to 1,000 kg big bags possible (different sizes upon request) Pallet weight: Various Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry

Light-colored fillers

White pigments - *Pigments for coloring rubbers*

Co-precipitation

White pigment; combination of synthetic barium sulfate and zinc sulfide

Lithopone 30 % DS

Chemical name: White pigment based on zinc sulfide (30 %) and barium sulfate (70 %)
CAS Number: 1314-98-3, 7727-43-7

Hazards identification: Not classified as hazardous

Supplier: Venator

VENATOR

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Co-precipitated combination of zinc sulfide (30 %) and barium sulfate (70 %) • Polyalcohol used for organic treatment • Brightness L* (powder): Approx. 98 • 45 µm sieve residue: ≤ 0.004 % • Chemically resistant to substances between 4 and 12 pH • Excellent dispersibility • Low abrasiveness (due to a low Mohs hardness of around 3)	Sold as: White powder Weight per container: 25 kg bag Pallet weight: 1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Light-colored fillers

White pigments - *Pigments for coloring rubbers*

Synthetic barium sulfate

Light-colored fillers well-suited to FKM compounds

BLANC FIXE micro

Chemical name: Barium sulfate
CAS Number: 7727-43-7

Hazards identification: Not classified as hazardous

Supplier: Venator

VENATOR

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Synthetic barium sulfate • Serves as a dispersing aid for TiO2 and color pigments (no flocculation) • Narrow particle size for high-gloss specifications and intense brilliance in colored systems • Brightness L* (powder): Approx. 99 • Particle size D50: Ca. 0.7 [µm] • 45 µm sieve residue: ≤ 0.004 % • Popularly used in FKM elastomer compounds • Chemically inert • Organic surface coating	Sold as: Powder Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 6 months Special storage conditions: Cool and dry

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Blanc Fixe N

Chemical name: Synthetic barium sulfate
CAS Number: 7727-43-7

Hazards identification: Not classified as hazardous

Supplier: Venator

VENATOR

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Synthetic barium sulfate • Serves as a dispersing aid for TiO2 and color pigments (no flocculation) • Brightness L* (powder): Approx. 99 • Particle size D50: Ca. 4 [µm] • 45 µm sieve residue: ≤ 0.01 % • Popularly used in FKM elastomer compounds • Chemically inert • No surface coating	Sold as: Powder Weight per container: 25 kg bag / 500 kg big bag / 1,000 kg big bag Weight per pallet: 1,000 kg / 1,000 kg / 1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Light-colored fillers

White pigments - *Pigments for coloring rubbers*

Titanium dioxide

White pigments for producing white or light-colored products

Titanium dioxide is mainly extracted from titanium iron ore (ilmenite). There are essentially two types, differentiated according to crystal structure, coloring and Mohs hardness: Rutile (yellow tint) and anatase (blue tint).
Some Venator product lines include HOMBITAN®, SACHTLEBEN® and TIOXIDE®.

Rutile

TiO_2 grades	TiO_2 content [%]	Surface treatment/ coating	Untertone	pH value	Durability	Special features/ applications
TIOXIDE® TR42	93	Aluminum, silicon and organic	Blue	6-8	Very good	Strong resistance to outdoor exposure. Excellent weathering performance. Used for window profiles, etc.
TIOXIDE® TR48	97	Aluminum/organic: hydrophobic; proprietary	Strong bluish-white tinting	> 5	Moderately durable	Used in formulations demanding fine pigment dispersion and low volatility, e. g. thin films (LOI at 290 °C: Max. 0.4 %)
TIOXIDE® TR81	93	Aluminum, zirconium/ organic present	Neutral	6-9	Super durable	Excellent weathering resistance. Used for e. g. demanding exterior industrial coatings.
TIOXIDE® TR92	94	Aluminum, zirconium/ organic present	Neutral	6-9	Highly durable	Good weathering resistance, used for multi-purpose industrial and decorative coatings.
TIOXIDE® TC30	93	Aluminum, silicon/ organic: hydrophobic polysiloxane	Bluish	Not applicable	Highly durable	Good rheological (flow) properties and low dust generation. Very high level of brightness and low yellowness.
TIOXIDE® TC90	94	Aluminum/organic present	Neutral	6.5-9	Durable	High-level gloss, opacity and brightness.
TIOXIDE® RFC5	97	Aluminum/organic: hydrophobic polysiloxane	Bluish	Not applicable	Moderately durable	Good rheological (flow) properties and low dust generation. Strong lightening power. Very good dispersibility and low abrasion. Especially popular for products intended for outdoor use, e.g. window profiles.
SACHTLEBEN® RFK3	93	Aluminum, silicon, zirconium/organic: modified hydrophobic polysiloxane	Neutral/ bluish	7-8.5	Extremely durable	Good rheological (flow) properties and low dust generation. High lightening power. Very good dispersibility and low abrasion. Used in particular in the products for outdoor use, such as window profiles.

Light-colored fillers

White pigments - *Pigments for coloring rubbers*

Anatase

TiO_2 grades	TiO_2 content [%]	Surface treatment/ coating	Untertone	pH value	Particle size [µm]	Special features/ applications
HOMBITAN® LC-S	97	Organic coating	Very blue	7.8	0.3	Pigmentation of rubber compounds.

Additional varieties upon request.

Chemical name: Titanium dioxide
CAS Number: 13463-67-7

Hazards identification: Not classified as hazardous

Supplier: Venator

VENATOR

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Used as a white pigment for a variety of applications • Provides e. g. excellent optical properties (such as color and opacity) • Specific gravity: Approx. 4.1 g/cm³ • To find out more about the properties of the available grades, please refer to the table	Sold as: White powder Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, keep away from sunlight

Light-colored fillers

White pigments - *Pigments for coloring rubbers*

Zinc sulfides

White pigments that provide an alternative to titanium dioxides with lower Mohs hardness.

Sachtolith HD-S

Chemical name: Zinc sulfide
CAS Number: 1314-98-3

Hazards identification: Not classified as hazardous

Supplier: Venator

VENATOR

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• White pigment for coloring elastomers • Zinc sulfide content: 98 % • Brightness L* (powder): Approx. 97 • 45 µm sieve residue: ≤ 0.004 % • Crystal size [µm]: Approx. 0.3 • pH value: Approx. 7 • Lower Mohs hardness (3) than titanium dioxide (~ 5.5- 6) • Provides lower abrasion • Can partially replace TiO2 • Specific gravity: Ca. 4 g/cm³ • Organic treatment	Sold as: Powder Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Sachtolith L

Chemical name: Zinc sulfide
CAS Number: 1314-98-3

Hazards identification: Not classified as hazardous

Supplier: Venator

VENATOR

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• White pigment for coloring elastomers • Zinc sulfide content: 98 % • Brightness L* (powder): Approx. 97 • 45 µm sieve residue: ≤ 0.02 % • Crystal size [µm]: Approx. 0.3 • pH value: Approx. 6 • Lower Mohs hardness (3) than titanium dioxide (5.5) • Provides lower abrasion • Can partially replace TiO2 • Specific gravity: Ca. 4 g/cm³ • No organic treatment	Sold as: Powder Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Light-colored fillers

Zinc oxides

Organic pigments used as catalysts for sulfur-crosslinked rubber compounds to accelerate vulcanization. Zinc oxide can also be used as a moisture scavenger.

Active Zinc Oxide G-95

Chemical name: Zinc oxide
CAS Number: 1314-13-2

Hazards identification:

Supplier: Pan-Continental Chemical Co., Ltd.

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Zinc oxide (activates sulfur crosslinking in all diene rubbers) • Active ZnO with 40 m^2 BET surface • Low heavy metal content due to special manufacturing process • Manufactured through a basic wet chemical process (low proportion of heavy metals) • More active product: Same performance at a lower dosage • Usually dosed at about 3-5 phr	Sold as: Powder Weight per container: 20 kg bag / 500 kg big bag Weight per pallet: 1,000 kg / 500kg Pallet type: Other	Shelf life: 36 months Special storage conditions: Cool and dry

ZnO CS AZO HD

Chemical name: Zinc oxide + calcium carbonate
CAS Number: 1314-13-2, 471-34-1

Hazards identification:

Supplier: Pan-Continental Chemical Co., Ltd.

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Active zinc oxide (Active ZnO G-95) with 40 m^2 BET surface (Controlled structure), evaporated on calcium carbonate • Exhibits better mixing behavior than standard zinc oxide (better dispersion and distribution) • Lower heavy metal content due to unique manufacturing process • Helps reduce the zinc content in compounds, automotive tires, flooring and sports-facility surfaces, etc.	Sold as: Powder Weight per container: 20 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 36 months Special storage conditions: Cool and dry

Functional fillers

Activators

Magnesium oxide

Highly active magnesium oxide

Elastomag 170

Chemical name: Magnesium oxide
CAS Number: 1309-48-4

Hazards identification: Not classified as hazardous

Supplier: Martin Marietta

MARTIN MARIETTA

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Micronized, highly active grade made from magnesium-rich brine and dolomitic lime • Serves as a stabilizer, activator and acid acceptor in a variety of rubber compounds – especially halogenated rubber and fluoropolymers • MgO content: Min. 96 % • Surface Area (MAI): 160 - 210 % • Loss on ignition max. 8.5 % • CaO: < 1.5 % • Cl: < 0.5 % • Screen analysis 325 mesh min. 99.5 %	Sold as: White powder Weight per container: 22.68 kg bag Weight per pallet: 544.32 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Functional fillers

Activators

Magnesium oxide

Medium to highly active magnesium oxide

Magnesium Oxide Light Type E

Chemical name: Magnesium oxide
CAS Number: 1309-48-4

Hazards identification: Not classified as hazardous

Supplier: Buschle & Lepper

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Medium to highly active grade derived from seawater • Serves as a stabilizer, activator and acid acceptor in a variety of rubber compounds – especially halogenated rubber and fluoropolymers • MgO (anhydrous base) min. 97.5 % • Surface (BET): 100-130 m²/g • Loss on ignition max. 6.5 % • Screen analysis 325 mesh min. 99.7 %	Sold as: White powder Weight per container: 15 kg bag Weight per pallet: 480 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry

Functional fillers

Activators

Deovulc ZO

Chemical name: Zinc-2-ethylhexanoate
CAS Number: 85203-81-2

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• For natural rubber (especially for electric vehicle systems) • Can be used in diene rubbers, but not chloroprene rubber • Improves compression set, dynamic properties and reversion resistance due to higher crosslinking density • When mixing, we recommend adding fillers • Can fully or partially replace stearic acid • Good solubility, no blooming • Zinc content: 22-24 % • Kinematic viscosity: 10-40 mm²/s • Deovulc ZO can be dosed at up to 4 phr	Sold as: Colorless liquid Weight per container: 200 kg barrel Weight per pallet: 800 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry

Deovulc ZO DL

Chemical name: Zinc-2-ethylhexanoate
CAS Number: 85203-81-2

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG .

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• 67 % zinc-2-ethylhexanoate on silicon dioxide, better handling • For natural rubber (especially for electric vehicle systems) • Can be used in diene rubbers, but not chloroprene rubber • Improves compression set, dynamic properties and reversion resistance due to higher crosslinking density • When mixing, we recommend adding fillers • Can fully or partially replace stearic acid • Good solubility, no blooming • Zinc content: 14.5-15.5 % • Deovulc ZO DL can be dosed at up to 5 phr	Sold as: White powder (dust-free) Weight per container: 25 kg carton (PE inner bag) Weight per pallet: 600 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry

Functional fillers

Activators

Calcium hydroxide

Deovulc OH

Chemical name: Calcium hydroxide
CAS Number: 1305-62-0

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G
COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Finely divided calcium hydroxide • Activator and acid absorber in FKM • Extreme fineness allows for high activation potential and induction without stitching • FDA/BfR approved • Ash (2 hours/950 °C): 73-77 % • Screening distance (63 µm): Max. 0.2 % • Deovulc OH can be dosed up to 6 phr (in FKM we recommend 6 phr Deovulc OH and 3 phr MgO)	Sold as: White powder Weight per container: 18 kg carton (1 kg PE can) Weight per pallet: 648 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry

Functional fillers

High-performance fillers

Fluoro-oxidized fillers for reducing abrasion and improving friction coefficients. Creates an air cushion for transport rollers for paper and film production due to defined surface roughness, thus ensuring production reliability.

INHANCE fillers

INHANCE products are surface-treated fillers. In addition to reducing the abrasion and friction coefficients of reactive polymers, different surface properties can be achieved. UHMW-PE powders generally have a neutral effect on physical properties while potentially increasing strengths. At a 2-3 phr dosage, they increase hardness by 1 Shore A. In the case of rollers, incorporating the additives will cause a microstructure to form on the surface that may be desired to safely transport paper webs. This structure prevents the paper webs from adhering to the roller surface.

		Particle size			Packaging	
Grade	Material group	D10 [µm]	D50 [µm]	D90 [µm]	Fiber drum [kg]	Pallet [kg]
UH-1045	UHMW-PE	200	230	450	90.70	725.60
UH-1080		72	125	185	90.70	725.60
UH-1150		55	73	105	90.70	725.60
UH-1250		37	58	86	90.70	725.60
UH-1500		24	45	66	90.70	725.60
UH-1700		22	37	52	68.04	544.32
UH-1750		15	23	36	68.04	544.32
UH-1900		9	10	21	68.04	544.32
HD-1800	PE-HD	<10	20	52	90.70	725.60
TI-9100	Titanium carbide	*	1-2	<4	18.10	---
TI-9113		<40	63	85	18.10	---

* not specified / difficult to measure

Functional fillers

High-performance fillers

INHANCE UH series

Chemical name: Polyethylene UHMW-PE (ultra-high molecular weight)
CAS Number: 9002-88-4

Hazards identification: Not classified as hazardous

Supplier: INHANCE Technologies

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• UHMW-PE: Surface-modified fillers for improving the characteristics of polymers • INHANCE particles (chemically functionalized and thus surface-reactive) are mechanically incorporated into polymers • Improves polymer resistance to mechanical abrasion • Reduces sliding friction and surface tack (stickiness) • Polyethylenes have low density and temperature resistance, are susceptible to environmental stress cracking, have good toughness, very good chemical resistance, low strength and hardness • INHANCE particles differ only in particle size, not in degree of activation	Sold as: White powder of varying particle sizes Weight per container: See overview Weight per pallet: See overview Pallet type: Other	Shelf life: 36 months. Under normal storage conditions, the fillers will only lose surface activity to a minor extent over time; even years later, it is possible to utilize them without issue. Special storage conditions: Cool and dry

INHANCE HD-1800

Chemical name: Polyethylene – HDPE (high-density)
CAS Number: 9002-88-4

Hazards identification: Not classified as hazardous

Supplier: INHANCE Technologies

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• HDPE: Surface-modified fillers for improving the characteristics of polymers • INHANCE particles (chemically functionalized and thus surface-reactive) are mechanically mixed into polymers • Improves polymer resistance to mechanical abrasion • Reduces sliding friction and surface tack (stickiness) • Polyethylenes have low density and temperature resistance, are susceptible to environmental stress cracking, have good toughness, very good chemical resistance, low strength and hardness	Sold as: White powder of varying particle sizes Weight per container: See overview Weight per pallet: See overview Pallet type: Others	Shelf life: 36 months. Under normal storage conditions, the fillers will only lose surface activity to a minor extent over time; even years later, it is possible to utilize them without issue. Special storage conditions: Cool and dry

Functional fillers

High-performance fillers

INHANCE TI series

Chemical name: Titanium carbide
CAS Number: 12070-08-5

Hazards identification:

Supplier: INHANCE Technologies

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• INHANCE TI-9100: Pure titanium carbide powder (> 99 %) • INHANCE TI-9113 is an activated INHANCE UH-1250 with bound TI particles (min. 50 %) on the surface • TI-9113 significantly improves abrasion resistance, wear resistance and sliding friction (better abrasion behavior than metals can sometimes be achieved) • Blends enriched with INHANCE TI-9113 are lightweight, non-corrosive and electrically non-conductive • Applications: Machine parts and parts for mechanical and chemical environments in which replacing parts is very costly, e.g. impeller pumps, valve seats, piston rings, plastic gears, sealing rings, bearings, wear plates, sliding strips, cable sheaths and high-performance coatings	Sold as: Dark gray, free-flowing powder Weight per container: See overview Weight per pallet: See overview Pallet type: Other	Shelf life: 36 months. Under normal storage conditions, the fillers will only lose surface activity to a minor extent over time; even years later, it is possible to utilize them without issue. Special storage conditions: Cool and dry

Functional fillers

Moisture absorbers

Moisture absorbers are used to prevent bubbles caused by residual moisture.

Deosec PD

Chemical name: Calcium oxide
CAS Number: 1305-78-8

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Moisture absorber • No porosity due to moisture • Mainly for extrusion applications • Active ingredient content: 92-100 % (max. 5 % mineral oil) • Particle size: > 45 µm max. 0.05 % • Deosec PD can be dosed up to 12 phr	Sold as: White powder (dust-free) Weight per container: 20 kg bag (1 kg pre-weighed EVA bags) Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Rubber Chemicals

Accelerators

We carry a broad selection of different sulfur accelerators. Depending on the product, and to meet the different "mixing philosophies" of our partners, we also supply a variety of dosage forms:

- **OP = oiled powder**
- **GR = granules**
- **GRC = oiled powder granules**
- **MG = masterbatch granules/polymer-bound granules**

Accelerator blends

Deovulc BG 187 V

Chemical name: Combination of thiazole, dithiophosphate and basic accelerator
CAS Number: 85940-28-9; 120-78-5; 102-06-7; 149-30-4; 7631-86-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:

• Mixture of different sulfur accelerators
• Combination of thiazole/dithiophosphate and basic accelerators (phosphordithionic acid, disulphides, diphenylguanidine, benzothiazoles on silica)
• Balanced curing behavior leads to vulcanisates with good heat resistance and compression set
• No efflorescence, no discoloration
• Curing times can be shortened by adding Norcure ZBEC, Norcure TBzTD or Norcure CBS
• Nitrosamine-free
• Sulfur content: 18.5-21.5 %
 	
• In addition to 0.8-2 phr of sulfur, we recommend dosing Deovulc BG 187 V at:
  • 4-6 phr in black formulations
  • 6-8 phr in light-colored compounds
	Sold as: Beige powder or granules
	
	Weight per container: 25 kg carton (PE inner bag)
	Weight per pallet: 600 kg
	Pallet type: Other
		Shelf life: 18 months
		
		Special storage conditions:
		Cool and dry, no direct sunlight

Accelerators

Accelerator blends

Deovulc EG 3 MF

Chemical name: Combination of highly effective accelerators, contains no ETU
CAS Number: 85940-28-9, 136-23-2, 14324-55-1, 120-78-5, 137-26-8, 102-06-7, 149-30-4, 7631-86-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mixture of different sulfur acceleratorss • Synergistic combination of different accelerators (phosphorodithionic acid, zinc dithiocarbamates, disulide, thiram, diphenylduanidine, benzothiazoles, silica) • Fast compounding for EPDM • Designed for extrusion and injection molding • Vulcanisates with good heat resistance, low compression set • No efflorescence, no discoloration • ETU-free • Sulfur content: 25.3-28.3 % • In addition to a dosage of 0.75-1.5 phr sulfur, we recommend a dosage of 3-5 phr Deovulc EG 3 MF	Sold as: Beige powder Weight per container: 20 kg carton Weight per pallet: 600 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Accelerator blends

Deovulc BG 383

Chemical name: Guanidine-free combination of nitrosamine-non-toxic accelerators
CAS Number: 85940-28-9, 14726-36-4, 120-78-5, 95-33-0, 149-30-4, 7631-86-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:

• Mixture of different sulfur accelerators
• Synergistic combination of different accelerators (phosphorodithionic acid, zinc dithiocarbamates, disulfides, sulfenamides, benzothiazoles on silica)
• Mainly for EPDM
• For extrusion and injection molding
• Balanced curing behavior leads to vulcanizates with good heat resistance and compression set
• No efflorescence, no discoloration
• Nitrosamine-free
• Free of DPG
• Sulfur content: 18.5-21.5 %
 	
• In addition to a dosage of 0.8-1.5 phr sulfur, we recommend a dosage of:
  • 5-6 phr in black formulations
  • 6-8 phr in light-colored compounds
	Sold as: Beige powder or granules
	
	Weight per container: 25 kg carton
	Weight per pallet: 600 kg
	Pallet type: Other
		Shelf life: 18 months
		
		Special storage conditions:
		Cool and dry, no direct sunlight

Accelerators

Benzimidazoles

Norantox MMBI

Chemical name: Methyl-2-mercaptobenzimidazole
CAS Number: 53988-10-6

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Antioxidant that also affects sulfur crosslinking rubber compounds • Is a non-staining antioxidant • MMBI is mainly used in combination with other antioxidants to achieve synergistic effects • MMBI has a retarding effect on CBS, MBT and on thiuram and dithiocarbamate accelerators. This increases safety from scorching and storage stability. • Does not bloom at recommended dosage without sulfur, max. 4 phr • Nitrosamine-free • Norantox MMBI is dosed at up to 4 phr (without sulfur)	Sold as: OP, MG (70 % active ingredient) Weight per container: 20 kg bag / 25 kg box Weight per pallet: 400 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Norantox ZMMBI

Chemical name: Zinc methylmercaptobenzimidazole
CAS Number: 61617-00-3

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a benzimidazole • Non-staining antioxidant • ZMMBI is mainly used in combination with other antioxidants to achieve synergistic effects • Offers excellent protection against heat and oxygen aging, especially in combination with amine- or phenol-like antioxidants (e.g. Norantox TMQ or Quantox 45) • Can be used in either peroxide or sulfur cross-linking systems • Norantox ZMMBI 50 MG is usually dosed at up to 4 phr	Sold as: OP, MG (50 % active ingredient) Weight per container: 20 kg bag / 25 kg box Weight per pallet: 400 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Dithiocarbamate

Norcure ZBEC

Chemical name: Zinc dibenzyl dithiocarbamate
CAS Number: 14726-36-4

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur-curing rubber compounds. • Norcure ZBEC can be used as first or second accelerator in NR, SBR, NBR, IIR, EPDM, etc. • As a second accelerator, ZBEC is often used in combination with mercapto and sulfenamide accelerators to shorten the scorch time (aging resistance is reduced) • Due to the short scorch time, it is advisable to process compounds as soon as possible • Offers high strength, high modulus and good elastic properties • Nitrosamine-safe (reaction product is considered harmless) • Norcure ZBEC is usually dosed at up to 2 phr	Sold as: OP, MG (70 % active ingredient) Weight per container: 25 kg box / 25 kg box Weight per pallet: 600 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Norcure ZDBC

Chemical name: Zinc dibutyl dithiocarbamate
CAS Number: 136-23-2

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Can be used as primary or secondary accelerator for e.g. NR, IR, SBR, NBR, IIR and EPDM • Very short scorch time and high vulcanization speed • Scorch time decreases in the following order: ZDEC < ZDBC < ZBEC • To improve aging resistance (e.g. with NR or IR), using antioxidants is recommended • Forms nitrosamines • Norcure ZDBC is usually dosed at up to 2 phr	Sold as: OP, MG (80 % active ingredient) Weight per container: 25 kg box / 25 kg box Weight per pallet: 600 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Dithiocarbamate

Norcure ZDEC

Chemical name: Zinc diethyl dithiocarbamate
CAS Number: 14324-55-1

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Can be used as primary or secondary accelerator for e.g. NR, IR, SBR, NBR, IIR and EPDM • Very short scorch time and high vulcanization speed • Scorch time decreases in the following order: ZDEC < ZDBC < ZBEC • To improve the aging resistance (e.g. with NR or IR), using antioxidants is recommended • Forms nitrosamines • Norcure ZDEC is usually dosed at up to 2 phr	Sold as: OP, MG (75 % active ingredient) Weight per container: 25 kg box / 25 kg box Weight per pallet: 600 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Phosphates

Norcure ZDTP 70 KS

Chemical name: 70 % zinc dialkydithiophosphate, (30 % silica)
CAS Number: 68442-22-8

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Norcure ZDTP 70 KS is especially popular in EPDM (secondary accelerator) • Usually does not lead to efflorescence or discoloration • Easy dosage and dispersion in compounds • Nitrosamine-free • Norcure ZDTP 70 KS is usually dosed at up to 2 phr	Sold as: Fine dust-free powder (light white) Weight per container: 25 kg carton Weight per pallet: 600 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight; melting point at -10 °C

Deovulc TP 4-75 V

Chemical name: Zinc dialkyldithiophosphate
CAS Number: 85940-28-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Accelerator for EPDM • 75 % ZDTP on silica (average C-chain length = 4) • Short flow times and fast-curing (especially when used as a primary accelerator in EPDM) • Used alone or in combination with thiazoles or sulfenamides • No efflorescence, no discoloration • Sulfur content: 14-17 % • Nitrosamine-free • Deovulc TP 4-75 V can be dosed between 1.5 and 4 phr	Sold as: White powder Weight per container: 25 kg carton Weight per pallet: 600 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Sulfenamides

Norcure CBS

Chemical name: N-cyclohexyl-2-benzothiazole sulfenamide
CAS Number: 95-33-0

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of sulfenamide • Vulcanization accelerator for sulfur cross-linking rubber compounds • Widely used in NR, SBR, NR/BR, SBR-Blend, NBR and other synthetic rubbers • Typical applications: Tires, conveyor/gear belts, tire retreads, shoes, hoses, cables • Limited stability above 120 °C • It is advised to add CBS at the end of the mixing cycle; in combination with retarding agents, it is also possible to use it for single-stage inner compounding • Nitrosamine-free • Norcure CBS is usually dosed at up to 2 phr	Sold as: OP, GR, GRC, blue MG (80 % active ingredient) Weight per container: OP, GR, GRC: 25 kg bag, blue MG: 25 kg box Weight per pallet: OP, GR, GRC: 600 kg, blue MG: 450 kg Pallet type: Other	Shelf life: OP, GR, GRC: 6 months, blue MG: 18 months Special storage conditions: Cool and dry, no direct sunlight

Norcure DCBS GR

Chemical name: N,N-Dicyclohexylbenzothiazole-2-sulfenamide
CAS Number: 4979-32-2

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Primary accelerator for natural and synthetic rubber • Highest scorch safety in the sulfenamide range • Typical applications: Tires, conveyor belts, shock absorbers and molded parts with long flow paths • ZnO necessary, stearic acid recommended for high modulus • Nitrosamine-safe	Sold as: Yellowish to slightly pink GR Weight per container: 25 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Sulfenamides

Norcure OTOS 75 MG

Chemical name: N-oxydiethylene-thiocarbamyl-N'-oxydiethylene-sulfenamide
CAS Number: 13752-51-7

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Limited stability from 120 °C • Can also be used in combination with retarding agents for single-stage internal compounding • Forms nitrosamines	Sold as: Grey-white MG (75 % active ingredient) Weight per container: 25 kg carton Weight per pallet: 450 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

Norcure TBBS

Chemical name: N-tert-butylbenzothiazole-2-sulfenamide
CAS Number: 95-31-8

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Widely used in NR, SBR, NR/BR, SBR compounds, NBR and other synthetic rubbers • Typical applications: Tires, conveyor/gear belts, tire retreads, footwear, hoses, cables • Limited stability above 120 °C • It is advised to add TBBS at the end of the mixing cycle; in combination with retarding agents, it is also possible to use it single-stage internal mixing • Nitrosamine-free • Norcure TBBS is usually dosed at up to 2 phr	Sold as: Yellowish OP, GR, MG (80 % active ingredient) Weight per container: OP, GR, GRC: 25 kg bag, MG: 25 kg box Weight per pallet: OP, GR, GRC: 600 kg, blue MG: 450 kg Pallet type: Other	Shelf life: OP, GR, GRC: 6 months, MG: 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Sulfur donors

Norcure DTDC 80 MG

Chemical name: Caprolactam disulfide
CAS Number: 23847-08-7

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur donor • This is caprolactam disulfide (CLD for short) • DTDC/CLD is a non-staining sulfur donor without an accelerator effect • Particularly suitable for high processing temperatures and large-volume components • Produces elastomers with good heat resistance and low compression set • Efflorescence does not occur • Nitrosamine-free	Sold as: Grey-white MG (80 % active ingredient) Weight per container: 25 kg carton Weight per pallet: 450 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Thiazoles

Norcure MBT 80 MG

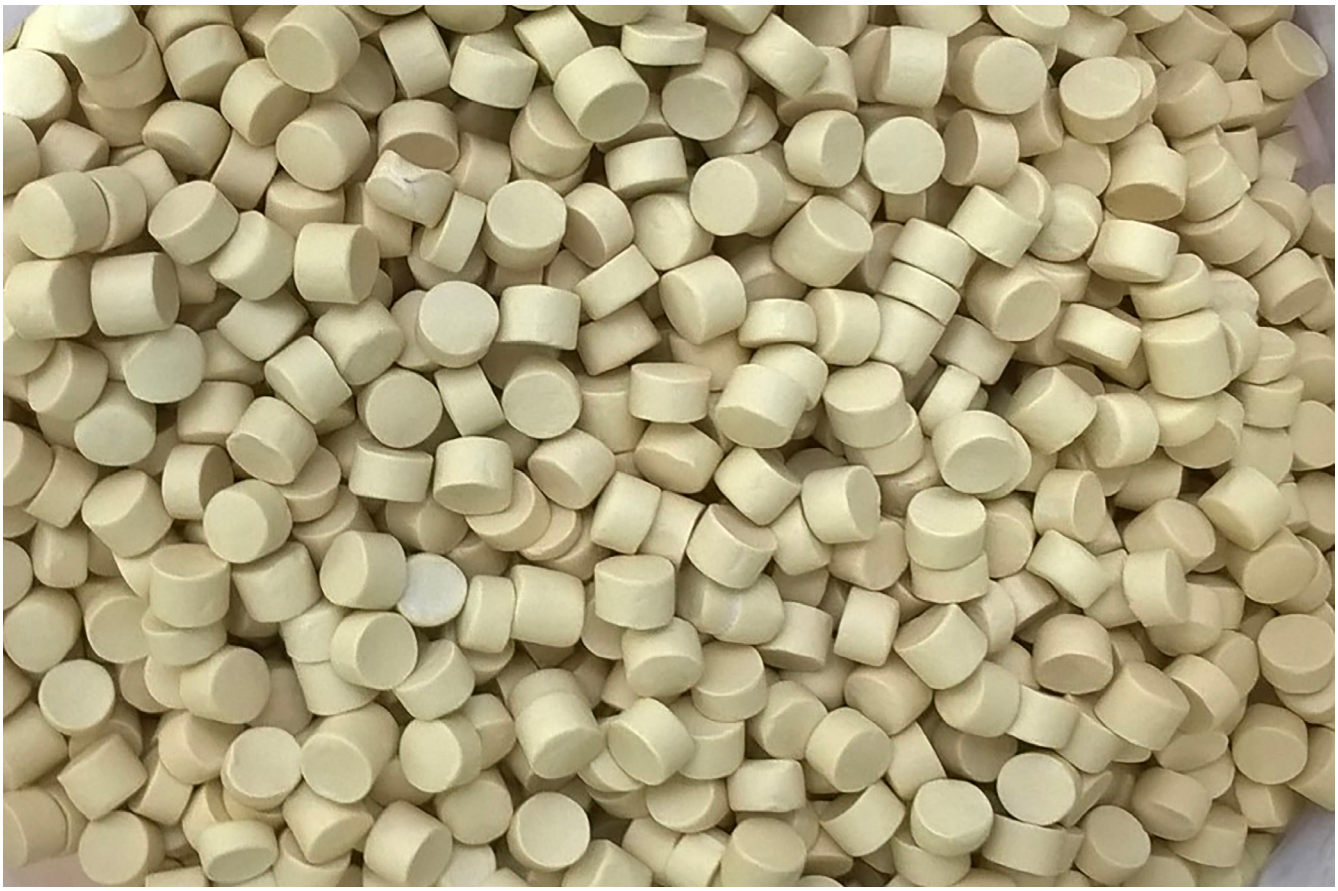
Chemical name: 2-Mercaptobenzothiazole
CAS Number: 149-30-4

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Possible applications: Tires, hoses, shoe soles, conveyor belts, drive belts, etc. • Activated by ZnO/stearic acid • Elastomers with very good reversion resistance • Thiazoles retard thiuram/dithiocarbamate systems and reduce any possible efflorescence effects • In sulfur-free compounds, MBT acts as an anti-scorch agent • Nitrosamine-free	Sold as: MG (80 % active ingredient) Weight per container: 25 kg bag Weight per pallet: 450 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight



Accelerators

Thiazoles

Norcure MBTS

Chemical name: Mercaptobenzothiazole disulphide
CAS Number: 120-78-5

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • A primary accelerator with medium vulcanization speed and moderate scorch safety • Possible applications: Tires, hoses, shoe soles, conveyor belts, drive belts, etc. • Activated by ZnO/stearic acid; produces vulcanizates with very good reversion resistance • Retards thiuram and dithiocarbamate systems and reduces their possible efflorescence effects • Can be “boosted” by basic accelerators (e.g. DPG) • Substances such as PVI, NDPA, phthalic anhydride or salicylic acid can be used to retard thiazoles • Nitrosamine-free • Norcure MBTS is usually dosed at up to 2 phr	Sold as: OP, GR, GRC, MG (70 % active ingredient) Weight per container: 25 kg bag / 25 kg bag / 25 kg bag / 25 kg box Weight per pallet: 600 kg / 600 kg / 600 kg / 450 kg Pallet type: Other	Shelf life: 24 months / 24 months / 24 months / 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Thiurams

Norcure DPTT

Chemical name: Di-pentamethylenethiuram tetrasulphide
CAS Number: 971-15-3

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Can be used as a sulfur donor in low-sulfur or sulfur-free compounds • Forms nitrosamines • Norcure DPTT is normally dosed at up to 2 phr	Sold as: Slightly yellowish OP, beige to slightly yellowish MG (75 % active ingredient) Weight per container: 25 kg bag / 25 kg box Weight per pallet: 600 kg / 450 kg Pallet type: Other	Shelf life: 24 months / 18 months Special storage conditions: Cool and dry, no direct sunlight

Norcure TBzTD

Chemical name: Tetrabenzylthiuram disulfide
CAS Number: 10591-85-2

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur curing rubber compounds • Norcure TBzTD can be used as a primary or secondary accelerator in NR, SBR or NBR compounds; in EPDM, it can be used as a secondary accelerator • Does not cause discoloration • Replaces TMTD, which forms toxic nitrosamines • Compared to TMTD, it offers greater scorch safety • Forms nitrosamines	Sold as: OP, GR, light yellow MG (80 % active ingredient) Weight per container: 25 kg box / 25 kg box / 25 kg box Weight per pallet: 600 kg / 600 kg / 450 kg Pallet type: Other	Shelf life: 24 months / 24 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Thiurams

Norcure TiBTD

Chemical name: Isobutylthiuram disulphide
CAS Number: 3064-73-1

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Is a thiuram • Norcure TiBTD is used in EPDM, NBR, NR or SBR compounds • Faster cross-linking compared to other thiurams, also offers greater scorch safety • Processing and molding are possible at higher temperatures • Norcure TiBTD can replace accelerators such as TMTD, TETD, DPTT and TMTM • Melting point of at least 65 °C • Nitrosamine-safe • Norcure TiBTD is usually dosed at up to 2 phr	Sold as: White to yellowish OP, GR Weight per container: 25 kg box / 25 kg box Weight per pallet: 600 kg / 600 kg Pallet type: Other	Shelf life: 24 months / 24 months Special storage conditions: Cool and dry, no direct sunlight

Norcure TMTM

Chemical name: Tetramethylthiuram monosulfide
CAS Number: 97-74-5

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vulcanization accelerator for sulfur cross-linking rubber compounds • Use as primary or secondary accelerator for NR, SBR, NBR, IIR and EPDM, as well as others • Non-discoloring • Vulcanisates with high cross-linking density, high-level strength and good elastic properties • Nitrosamine-free • Norcure TMTM is usually dosed at up to 3 phr	Sold as: White OP Weight per container: 25 kg box Weight per pallet: 600 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

Accelerators

Others

Norantox NDBC

Chemical name: Nickel-dibutyl-dithiocarabamate
CAS Number: 13927-77-0

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Non-staining antioxidant • NDBC is also used as a secondary accelerator in sulfur cross-linking elastomers • For dynamic applications in which antiozonant waxes are not used, an antiozonant effect is achieved (e.g. in SBR, BR, CR, NBR and IIR compounds) • Also provides antioxidant protection in CR, CSM, CO, ECO and EPDM • Typical applications: hoses and gaskets • Norantox NDBC 75 MG is dosed as an antioxidant at up to 2 phr and as an accelerator (often in combination with other dithiocarbamates) at up to 1 phr	Sold as: MG (75 % active ingredient) Weight per container: 25 kg box Weight per pallet: 450 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

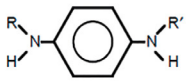
Antioxidants

All elastomers are exposed to a wide variety of aging processes. These range from thermo-oxidative influences to the effects of ozone and UV radiation, often in combination with mechanical stress. To counteract aging phenomena such as yellowing, embrittlement, chalking or loss of mechanical properties, a variety of antioxidants can be employed. According to their chemical structure, antioxidants are often divided into primary antioxidants and secondary antioxidants. In addition, we carry UV stabilizers and a diverse selection of light and ozone protection waxes.

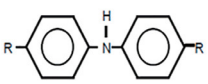
Primary antioxidants

Primary antioxidants (also called chain-breaking antioxidants) intercept and destroy chain-propagating peroxy and alkoxy radicals before they can react with polymers. Predominantly, these include aromatic amines and hindered phenols. These substances contain very active hydrogen atoms that can be delivered to the chain propagating peroxy, alkoxy and hydroxy radicals. The radicals are usually converted into inert by-products such as alcohols and water.

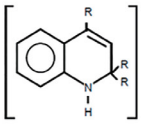
aromatic amines



p-Phenylendiamines

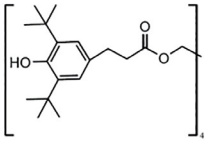


Diphenyldiamines



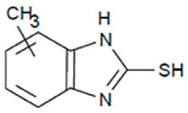
Trimethyl dihydroquinolines

hindered phenols



Substituted phenols

Benzimidazoles



heterocyclic mercapto compounds

Sirantox 6PPD

Chemical name: N-(1,3-dimethylbutyl)-N`phenyl-p-phenylenediamine
CAS Number: 793-24-8

Hazards identification:

Supplier: Sennics

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of PPD (p-phenylenediamine) • Strongly discoloring antioxidant with ozone and fatigue-protection effects • Suitable for natural and synthetic rubbers or for synthetic polymers – e.g. SBR – as a stabilizer • Counteracts fatigue under static and dynamic operating conditions • Offers synergistic effects in combination with Norantox TMQ • Compared to IPPD is less volatile and also extractable with water • Partially activating effects on the vulcanization process (especially with CR) • Sirantox 6PPD is usually dosed at up to 3 phr	Sold as: Dark pastilles Weight per container: 25 kg bag/1,000 kg BB Weight per pallet: 600 kg/1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight. **Important:** melting point = 45-50 °C, maximum storage temperature = 35 °C

Antioxidants

Primary antioxidants

Sirantox IPPD

Chemical name: N-isopropyl-N'-phenyl-p-phenylenediamine
CAS Number: 101-72-4

Hazards identification:

Supplier: Sennics

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of PPD (p-phenylenediamine) • Strongly discoloring antioxidant with ozone and fatigue-protection effects • Suitable for natural rubber as well as for synthetic rubbers, e.g. SBR • Especially effective against ozone-induced aging (cracking, etc.) • Good protection against thermo-oxidative aging and light aging • Good dispersibility • Sirantox IPPD is usually dosed at up to 4 phr	Sold as: Dark pastilles weight per container: 25 kg bag/1,000 kg big bag Weight per pallet: 600 kg/1,000 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight. **Important:** melting point = 72-76 °C, maximum storage temperature = 55 °C

Sirantox 77PD

Chemical name: N-(1,4- Dimethylpentyl)-N'- phenyl-p-phenylenediamine
CAS Number: 3081-14-9

Hazards identification:

Supplier: Sennics

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of PPD (p-phenylenediamine) • Strongly discoloring antioxidant with ozone and fatigue-protection effects • Suitable for cables, rubber pipes, taps and other outdoor rubber products that are in long-term static state, besides general industrial rubber products • Separately used for rubber products having rigid requirements for resistance against static ozone aging • Used as a polymer stabilizer in particular emulsion SBR (loadings 0.05 – 0.5%)	Sold as: Dark liquid Weight per container: 170 kg per drum Weight per pallet: 680 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, well-ventilated in galvanized iron drum. **Important:** Melting point - 36 °C.

Antioxidants

Primary antioxidants

Norantox MMBI

Chemical name: Methyl-2-mercaptobenzimidazole
CAS Number: 53988-10-6

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Antioxidant that also affects sulfur crosslinking rubber compounds • Is a non-staining antioxidant • MMBI is mainly used in combination with other antioxidants to achieve synergistic effects • MMBI has a retarding effect on CBS, MBT, thiuram and dithiocarbamate accelerators that prevents scorching and supports storage stability • Does not bloom when kept to recommended dosage (max. 4 phr without sulfur) • Nitrosamine-free • Norantox MMBI is dosed at up to 4 phr (without sulfur)	Sold as: OP, MG (70 % active ingredient) Weight per container: 20 kg bag / 25 kg box Weight per pallet: 400 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Norantox ZMMBI

Chemical name: Zinc methylmercaptobenzimidazole
CAS Number: 61617-00-3

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of benzimidazole • Non-staining antioxidant • ZMMBI is mainly used in combination with other antioxidants to achieve synergistic effects • Excellent protection against heat and oxygen aging, especially in combination with amine- or phenol-like antioxidants (e.g. Norantox TMQ or Quantox 45) • Can be used in both peroxide and sulfur cross-linking systems • Norantox ZMMBI 50 MG is usually dosed at up to 4 phr	Sold as: OP, MG (50 % active ingredient) Weight per container: 20 kg bag / 25 kg box Weight per pallet: 400 kg / 450 kg Pallet type: Other	Shelf life: OP 24 months / MG 18 months Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

Primary antioxidants

Norantox NDBC

Chemical name: Nickel-dibutyl-dithiocarbamate
CAS Number: 13927-77-0

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Non-staining antioxidant • NDBC is also used as a secondary accelerator in sulfur cross-linking elastomers • For dynamic applications in which antiozonant waxes are not used, an antiozonant effect is achieved (e.g. in SBR, BR, CR, NBR and IIR compounds) • Also provides antioxidant protection in CR, CSM, CO, ECO and EPDM • Typical applications: hoses and gaskets • As an antioxidant, Norantox NDBC 75 MG is dosed at up to 2 phr; as an accelerator (often in combination with other dithiocarbamates), up to 1 phr	Sold as: MG (75 % active ingredient) Weight per container: 25 kg box Weight per pallet: 450 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

Norantox TMQ

Chemical name: 2,2,4-tri-methyl-1,2-dihydroquinoline
CAS Number: 26780-96-1

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of TMQ (trimethyl-dihydroquinolines) • Slightly discoloring antioxidant with slight antiozonant effect • Peroxide-compatible primary antioxidant • Used in NR, SBR, IR, BR, NBR and EPDM, among others • Strong inhibitory effect for catalytic oxidation of metals • Synergistic effect with 6PPD • Norantox TMQ is usually dosed at up to 3 phr	Sold as: Amber to brown granules, powder Weight per container: 25 kg bag Weight per pallet: 700 kg Pallet type: Other	Shelf life: 24 years Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

Primary antioxidants

Quantox 45

Chemical name: 4,4'-bis(1,1-dimethylbenzyl)-diphenylamine
CAS Number: 10081-67-1

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of CDPA (cumylated diphenylamine) • Slightly discoloring antioxidant and heat stabilizer • Is used in EPDM, CR, NBR, HNBR and AEM, among others • Combination of very good aminic antioxidant effect and low influence on color fidelity • Weak discoloration by UV radiation. • Synergistic effect in combination with sodium carbonate/ ZMMBI • Quantox 45 is normally dosed at up to 1.5 phr	Sold as: White-grey powder, micro-granules Weight per container: 25 kg drums / 25 kg drums Weight per pallet: 450 kg / 450 kg Pallet type: Other	Shelf life: 24 months / 24 months Special storage conditions: Cool and dry, no direct sunlight

Norantox ODPA

Chemical name: Bis(4-(1,1,3,3-tetramethylbutyl)phenyl)amine
CAS Number: 15721-78-5

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Slightly discoloring antioxidant and heat stabilizer • Used in NR, CR, NBR and NR blends, as well as other materials • Combination of very good aminic antioxidant effect and low influence on color fidelity • Provides excellent protection against thermo-oxidative aging • Very effective against dynamic fatigue • No sufficient ozone protection, so we recommend the use of other ozone protectants	Sold as: Light-brown powder, granules Weight per container: 25 kg bags / 25 kg bags Weight per pallet: 450 kg / 450 kg Pallet type: Other	Shelf life: 24 months / 24 months Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

Primary antioxidants

Norantox 1010

Chemical name: Tetrakismethylene (3, 5-di-t-butyl-4-hydroxyhydrocinnamate) methane
CAS Number: 6683-19-8

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of sterically hindered phenol • Non-staining antioxidant with low volatility • High molecular weight hindered phenolic antioxidant • Excellent resistance to extraction from polymer compounds • Use in IIR, SBS, SEBS, EPM and EPDM as well as other synthetic rubbers • Norantox 1010 is effective in most sulfur vulcanization systems • No significant effect on scorch or physical properties • Synergistic effect in combination with Norantox 168 • FDA approved • Norantox 1010 is normally dosed at up to 2 phr	Sold as: White to cream colored powder Weight per container: 20 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Norantox 1076

Chemical name: Octadecyl-3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate
CAS Number: 2082-79-3

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of sterically hindered phenol • Slightly discoloring antioxidant with low volatility • High molecular weight hindered phenolic antioxidant • Effectively reduces thermo-oxidative degradation • Odorless, light stable, increases color stability • Norantox 1076 is effective in most sulfur curing systems • No significant impairment of scorch or physical properties • Synergistic effect in combination with Norantox 168 • Norantox 1076 is usually dosed at up to 2 phr	Sold as: White powder Weight per container: 20 kg cartons Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Keep in a dry place. No decomposition if stored and applied as directed.

Antioxidants

Primary antioxidants

Norantox 1098

Chemical name: N, N'-Hexamethylene bis[3-(3,5-di-tert-butyl-4-hydroxyphenyl) propionamide]
CAS Number: 23128-74-7

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of sterically hindered phenol • Non-staining antioxidant with low volatility • Sterically hindered phenolic antioxidant • Protection of the color properties • Especially suitable for PA, PU, elastomers • Can be used in combination with other additives, e.g. co-stabilizers (e.g. phosphites, thioethers, hydroxylamines) or light stabilizers (e.g. UV absorbers, hindered amines) • Synergistic effect in combination with Norantox 168 • Norantox 1098 is usually dosed with 0.1-0.5 wt. %.	Sold as: White powder Weight per container: 20 kg cartons Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

Secondary antioxidants

The secondary antioxidants (also called preventive antioxidants or hydroperoxide decomposers) decompose chain-initiating hydroperoxides to non-radical products. This class includes the phosphites, zinc and nickel dialkyldithiocarbamates, dithiophosphates, mercaptobenzothiazoles and benzazoles.

Norantox 168

Chemical name: Tris(2,4-ditert-butylphenyl) phosphite
CAS Number: 31570-04-4

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of organophosphite • Non-discoloring antioxidant • Excellent hydrolytic stability (other phosphites are sensitive to hydrolysis!) • Prevents oxidation and changes in molecular weight (through chain scission, etc.) • Is used in thermoplastics (e.g. PE, PP, PC) and elastomers (BR, SEBS, SBS and others) Synergistic effect in combination with UV stabilizers or with hindered phenols (phenols improve storage stability and prevent thermo-oxidative degradation) • Effectively reduces peroxide-induced oxidative degradation • Norantox 168 is not recommended for sulfur vulcanization (destroyed during the process) and hydrolyses in the presence of acidic material • Synergistic effect with Norantox 1010, 1076, 1098 • Norantox 168 is usually dosed with 0.1-0.3 wt. %.	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

UV stabilizers

HALS (=Hindered Amine Light Stabilizers) are used in many polymers as light stabilizers. The reaction of the polymer with atmospheric oxygen triggered by UV light leads to the formation of free radicals on the surface. Ageing phenomena in the form of loss of gloss, cracking or chalking are the result. HALS intercept these free radicals.

Norantox UV 622

Chemical name: 1-(2-hydroxyethyl)-4-hydroxy-2,2,6,6-tetramethyl piperidine-succinic acid, dimethyl ester, copolymer (Synonyms: 1-piperidineethanol)

CAS Number: 65447-77-0

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• UV stabilizer • Is a type of HALS (hindered amine light stabilizer) • Excellent protection against UV radiation and long-term heat ageing • Very low volatility and low migration when used in clean surfaces • Excellent thermal stability at normal processing temperatures • It is used in thermoplastics (PE, PP, PVC, etc.) as well as in elastomers • Use with additives containing sulfur can have a negative influence on the effectiveness • Good compatibility with a wide range of polymers, good effectiveness with high carbon blacks content • FDA-approved • Norantox UV 622 is normally dosed at up to 1.2 phr	Sold as: White to slightly yellowish powder Weight per container: 25 kg bag Weight per pallet: 625 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

UV stabilizers

Norantox UV 770

Chemical name: Bis(2,2,6,6-tetramethyl-4-piperidinyl)sebacate
CAS Number: 52829-07-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• UV stabilizer • Is also a type of HALS (hindered amine light stabilizer) • Low molecular weight • Light-stabilizing effect • Use with additives containing sulfur can have a negative effect on efficacy • Can be combined with other UV stabilizers (HALS) • Can be used in thermoplastics (PE, PA, etc.) as well as in elastomers (e.g. EPDM) • FDA-approved • Norantox UV 770 is usually dosed at up to 1 phr	Sold as: White to slightly yellowish powder Weight per container: 25 kg bag Weight per pallet: 625 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

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Norantox UV 944

Chemical name: 1,6-Hexanediamine, N,N'-bis(2,2,6,6-tetramethyl-4-piperidinyl)-, polymer with 2,4,6-trichloro-1,3,5-triazine, reaction products with 2,4,4-trimethyl-2-pentanamine
CAS Number: 70624-18-9

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• UV stabilizer • Is also a type of HALS (hindered amine light stabilizers) • Extremely low volatility • High thermal stability (especially suitable for long-term applications) • Excellent compatibility with many substrates • Used in thermoplastics (PE, PP, etc.) as well as in elastomers (e.g. EPDM). • FDA-approved • Norantox UV 944 is normally dosed at 2-3 phr	Sold as: White powder Weight per container: 25 kg bag Weight per pallet: 625 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Antioxidants

Antiozonants

Ozone does not react with saturated polymers under normal conditions. However, if elastomers (with double bonds in the chain) are exposed to critical elongation at the same time as ozone, reactions can occur. As a result, cracks appear on the surface, which run transverse to the direction of stress.

Ozone protection waxes usually consist of paraffin and/or microcrystalline waxes, which slowly migrate to the surface of the component and form a protective film. Paraffin waxes consist of hydrocarbons of 20 to 50 C atoms. The melting point and the migration speed depend on the service temperature and the chain length of the wax. Microcrystalline waxes, on the other hand, are branched paraffins with a higher number of C atoms and a higher melting point. They migrate more slowly to the surface and a more flexible protective film is formed. They are often used for dynamically stressed products such as tires.

Due to the different environmental influences, a blend of both wax types is recommended to achieve maximum protection over a wide temperature and stress range.

Norantox 654

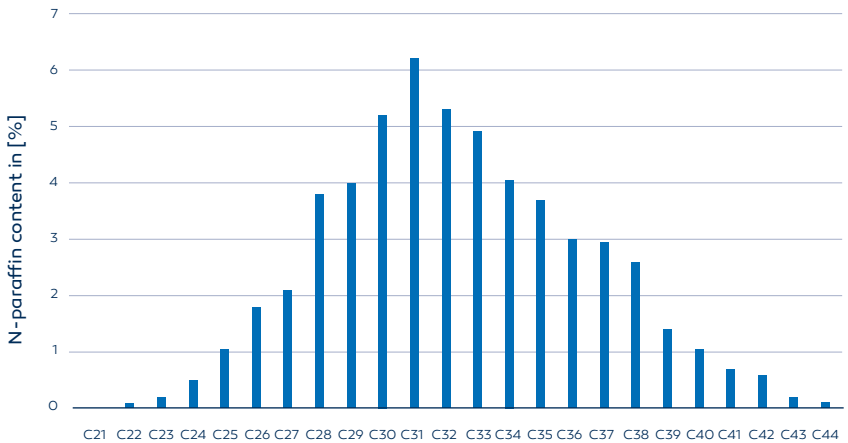
Chemical name: Mixture of paraffin and microcrystalline wax
CAS Number: None, due to being a mixture

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Is a type of antiozone wax • Only slightly soluble in the rubber matrix at room temperature • Mixing temperature should be above the wax's melting point • Depending on the application temperature, chain length of the wax, polymer used, etc., the wax migrates to the surface and forms a closed protective film • Norantox 654 is normally dosed at up to 8 phr	Sold as: Yellowish-brown pastilles Weight per container: 20 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight, max. 40 °C



Antioxidants

Antiozonants

Controzon

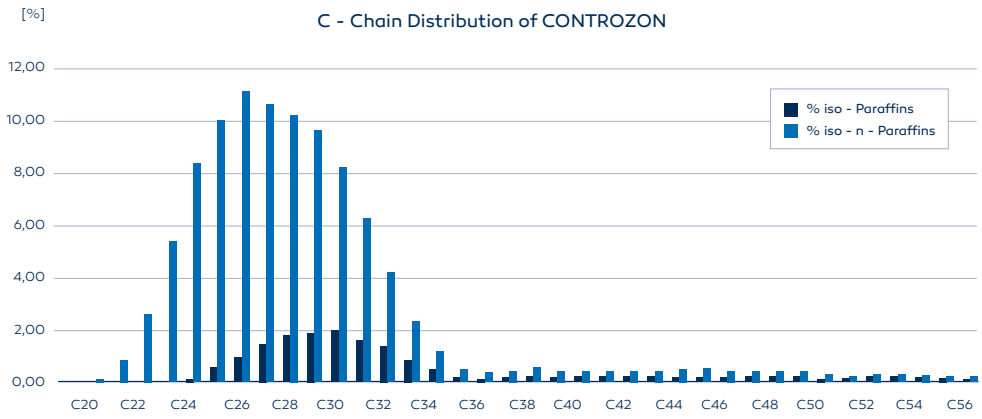
Chemical name: Antiozone wax with selected n- and iso-paraffins
CAS Number: 64742-51-4; 64742-42-3

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G. COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Specific molecular weight distribution with higher molecular weight fractions • Universal ozone protection wax for NR, IR, SBR and CR • Operating temperature range: 25-40 °C • Only slightly soluble in the rubber matrix at room temperature • Mixing temperature should be above the wax's melting point • Depending on the application temperature, chain length of the wax, polymer used, etc., the wax migrates to the surface and forms a closed protective film • FDA/BfR approved • Solidification point: 54-58 °C • Controzon can be dosed at up to 6 phr	Sold as: Whitish pellets Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight, max. 25 °C



Antioxidants

Antiozonants

Controzon Plus

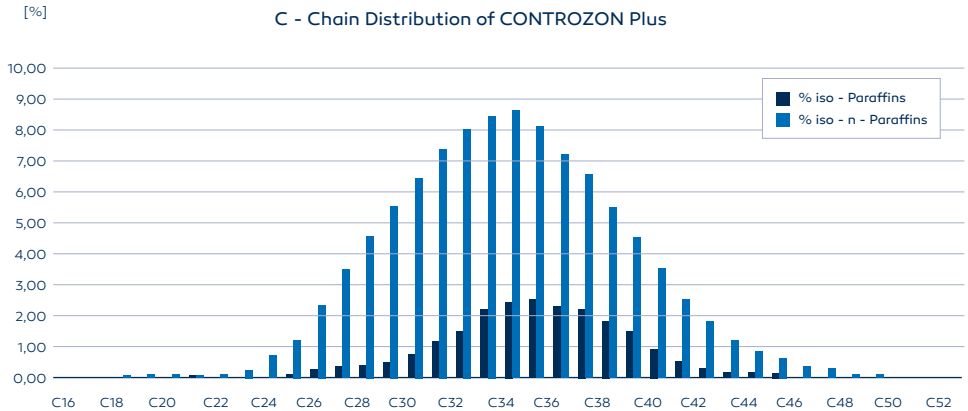
Chemical name: Antiozone wax with selected n- and iso-paraffins
CAS Number: 64742-51-4

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Medium molecular weight distribution • Operating temperature range: 40-50 °C • Only slightly soluble in the rubber matrix at room temperature • Mixing temperature should be above the wax's melting point • Depending on the operating temperature, chain length of the wax, polymer used, etc., the wax migrates to the surface and forms a closed protective film • Delivers good protection against dynamic stresses • Migration aid for antioxidants • For sponge rubber, conveyor belts, etc. • FDA/BfR-approved • Solidification point: 62-68 °C • Controzon Plus can be dosed at up to 6 phr	Sold as: Whitish pellets Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight, max. 25 °C



Antioxidants

Antiozonants

Controzon S

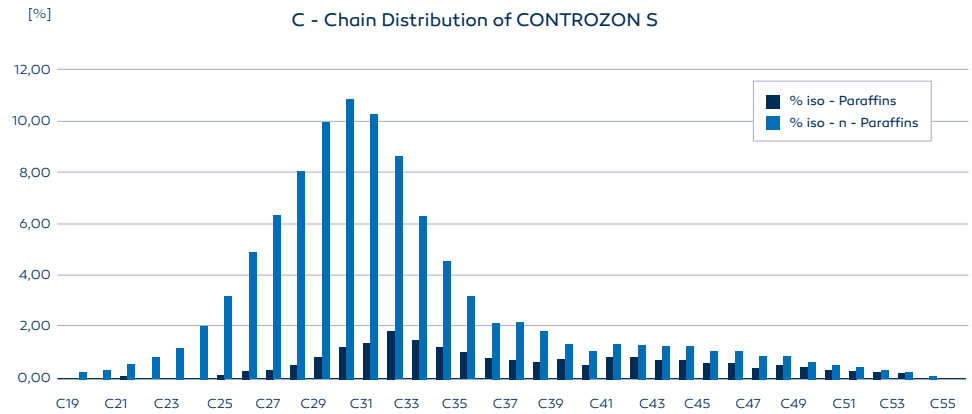
Chemical name: Antiozone wax with selected n- and iso-paraffins
CAS Number: 64742-51-4

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG .

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Specific molecular weight distribution with higher molecular weight fractions • For black rubber articles made of NR, IR, SBR and CR (tires, sponge rubber, conveyor belts, molded parts) • Operating temperature range: 40-50 °C • Good protection against dynamic stress • Migration aid for antioxidants • FDA/BfR-approved • Solidification point: 61-67 °C • Controzon S can be dosed at up to 6 phr	Sold as: Whitish pellets Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight, max. 25 °C



Antioxidants

Antiozonants

Controzon W

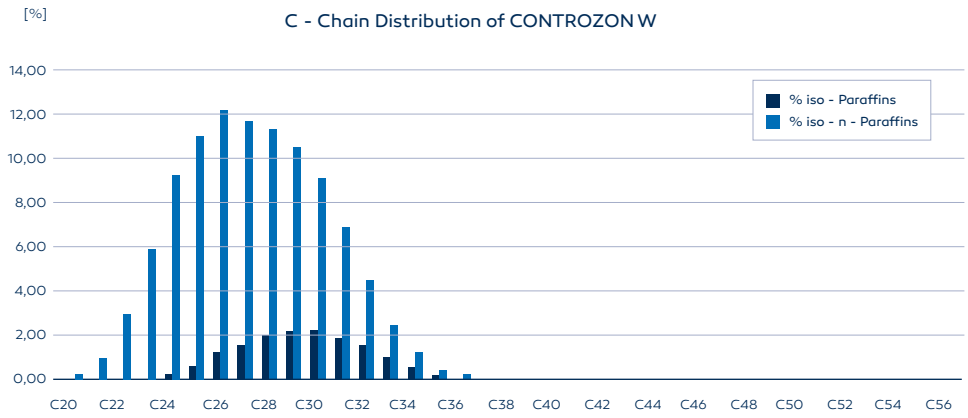
Chemical name: Antiozone wax with selected n- and iso-paraffins
CAS Number: 8002-74-2; 64742-60-5; 64742-51-4

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Narrow molecular weight distribution with higher molecular weight fractions • Universal ozone protection wax for NR, IR, SBR and CR • Operating temperature range: 25-40 °C • Migration aid for antioxidants • FDA/BfR-approved • Solidification point: 54-58 °C • Controzon W can be dosed at up to 6 phr	Sold as: Flakes Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight, max. 25 °C



Bonding agents

CILBOND® is a series of high-performance Primer and Cover Bonding Agents for Rubber, Polyurethane and Friction industries. They can be applied to a wide range of metal and plastic substrates like steel, stainless steel, Brass, Copper, Aluminium, Polyurethane, Polyamide and several more.

The Primer and the Cover have different functions in the finished product.

The Primer layer is thinner than the Cover and can be either solvent-based or water-based, which must be considered during the subsequent drying process. The Primer acts as a bonding agent between the substrate and the topcoat and protects the material from corrosion and environmental influences. Nonblack color provides visually differentiation from either substrate or cover. It can be used as one coat in certain applications (NBR bonding).

The Cover is used to bond the elastomer to the metal and form an additional barrier layer. At the same time, the Cover chemically binds to the Primer layer, resulting in an extremely stable bond. The different Cover provide prebake resistance in specific applications. The desired properties can be influenced by the right choice of cover and elastomer. This results in high chemical resistance to hot and aggressive media (glycols, oils, brake fluids) and extreme mechanical resilience (bridge bearings, seals, etc.)

CILBOND® systems consist of various components that are dispersed in solvents or water. When they stand, the polymers and solids sediment.

CILBOND® WILL NOT WORK PROPERLY IF IT HAS NOT BEEN STIRRED VERY WELL.

Solvent based

	Primer	Cover	One Coat	ACM	AEM Vamac® G series	AEM Vamac® DP series	IIR, Halo IIR	CR	CSM /ACSM	CPE	ECO	EPDM	NR / SBR (High Sulphur)	NR / SBR (Medium Sulphur)	NR / SBR (Low Sulphur)	BR / IR	PNR	NBR	XNBR	HNBR	PVC / NBR	Parel	VMQ (Peroxide cured)	VMQ (Pt / Pd cured)	FVMQ	FKM / FFKM (Peroxide cured)	FKM (Bisphenol / Bisamine Cured)	EVM	Heat Resistance: Max Temp. For 48 hours	Boiling Water Resistance: Hours	Glycol Resistance: Hours @ 160 °C	Salt Pray Testing: Hours to 4mm	Pre-bake Resistance: Minutes @ 160 °C
CILBOND® 10E	•		•																										170 °C	60 h	100 h	600 h	30 m
CILBOND® 12E / 80ET	•	•																											180 °C	100 h	600 h	500 h	10-15 m
CILBOND® 89ET			•																										170 °C	20 h	200 h	300 h	10-15 m
CILBOND® 24			•																										180 °C	100 h	1,000 h	500 h	30 m
CILBOND® 33C A/B			•																										250 °C				
CILBOND® 36			•																										230 °C	100 h	600 h	400 h	20 m
CILBOND® 82		•	•																										200 °C			1,000 h	20 m
CILBOND® R-7035			•																										200 °C		1,000 h	480 h	30 m
CILBOND® R-7085			•																										180 °C			1,000 h	10-20 m
CILBOND® R-7327			•																												1,000 h		15-30 m

Highly recommended

Recommended

Can be used

Notes on Environmental Test Information

Heat Resistance: The highest temperature when parts for heated for 48 hours, whilst achieving ≥ 90 % failure within the rubber.
Boiling Water testing: No Rubber-Cement or Cement-Metal fail : Test halted at 1000 hours (1000 hours means no observed failure).
Hot Glycol Testing: Tests conducted at 160 °C and failure detected as blisters in bond-line and/or Cement-Metal failure.
Salt-Spray Resistance: DIN/ISO 9227 2006; time to show <4 mm edge failure with rubber bonded parts.
Pre-Bake Resistance: A typical maximum time parts can be heated, prior to moulding at 160 °C, in minutes - pre-bake resistance is also compound dependent.

Bonding agents

Solvent based

CILBOND® 10E

Chemical name: Polymer with formaldehyde and phenol, additives and solvents
CAS Number: 108-10-1, 108-88-3, 67700-42-9, 1314-13-2, 13463-67-7, 100-97-0, 108-31-6

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• General purpose Primer for rubber to metal bonding • Can also be used as a one-coat bonding system for NBR to metal • Suitable system for ACM, NBR, XNBR, HNBR, PVC/NBR blends, ECO and Vamac® G and D compounds • E.g. rubber rollers, pipe coatings, oil seals, fuel seals, gaskets, hoses, fabric to rubber bonded laminates, general rubber goods, Torsional Vibration Damper (TVD´s) • Shows good resistance to hot and cold fluids and lubricants • Very good salt-spray resistance even under 30 % elastomer extension	Sold as: Grey liquid Packaging: CILBOND® 10E is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 18 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 12E

Chemical name: Polymer with additives and solvents
CAS Number: 108-88-3, 108-10-1, 78-93-3, 64742-95-6, 108-46-3, 1314-13-2, 100-97-0, 13463-67-7, 7782-49-2, 108-31-6, 1675-54-3

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• High performance Primer to a wide range of natural and pretreated metal substrates • Excellent adhesion to thermoplastics such as PPO, PPS, PES, PEEK, PET, PBT, nylons and even thermoset plastics such as UF, PF, RF, MF, GRP/FRP and epoxy resins. • Can be used under CILBOND® 80ET cover • Exceptional resistance against various media: hot brake fluids (>120 °C), oils, heat, environmental influences such as salt-spray, hot-fluids and humidity • E.g. hoses, belts, tank linings, pump linings, door and window seals, bushes, rollers, seals and gaskets, Torsional Vibration Damper (TVD´s) and other couplings, high-performance engine and suspension mounts, general rubber goods demanding a heat and dynamic fatigue resistant bond.	Sold as: Grey liquid Packaging: CILBOND® 12E is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 80ET

Chemical name: Polymer with additives and solvents
CAS Number: 108-88-3, 3006-93-7, 9003-34-3, 1675-54-3

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• High performance Cover coat for a range of elastomers • Suited for NR, SBR, CR, IR, NBR and XNBR, HNBR, BR, EPM, EPDM, IIR, CIIR and BIIR, ECO, CSM and ACSM, Vamac®, EVA / EVM, ACM, CPE. • CILBOND® 12E + CILBOND® 80ET an ultimate in bond performance & for toughest in-service environments (long-term temperature performance from -80 °C to + 220 °C, hot-water test: 504 hours @ 70 °C, long-term hot glycol resistance: 160 °C for >500 hours etc.) • E.g. bridge bearings, swellable oilfield packers, cavity pump, rubber lined stators, hydromounts, pump linings, tank linings, hoses, rollers and other rubber to metal bonded components	Sold as: Black liquid Packaging: CILBOND® 80ET is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 89ET

Chemical name: Polymer with additives and solvents
CAS Number: 108-88-3, 9016-87-9, 9003-34-3, 3006-93-7, 4083-64-1, 98-59-9

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• High performance one coat bonding agent for a wide range of substrates • Suitable for NR, SBR, CR, IR, NBR, XNBR, HNBR (sulphur and peroxide cured), BR, EPM, EPDM (sulphur or peroxide cured and silicone modified), IIR, CIIR and BIIR, ECO, CSM and ACSM, EVA / EVM, ACM, CPE, Millable PU (sulphur or peroxide cured) Cast PU (prepolymer or quasi systems), Vamac® (AEM), Thermoplastic elastomers (TPE) • Bonds are temperature resistant between -40° C to + 180° C • It is excellent for low temperature post-vulcanisation bonding when the coated surface can be heated to at least 60° C • The low temperature curing properties makes CILBOND® 89ET a good choice for the following applications: tank lining, rollers and wheels, belting, seals, automotive components, PU to rubber combinations, other low-temperature bonding applications.	Sold as: Black liquid Packaging: CILBOND® 89ET is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 24

Chemical name: Polymer with additives and solvents
CAS Number: 78-93-3, 64742-95-6, 108-88-3, 100-97-0, 108-46-3, 105-11-3, 7782-49-2, 108-31-6

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• High performance one coat bonding system for NR, SBR, CR, BR, IR, AEM / Vamac® G, ECO, CSM / ACSM, ACM, XNBR, EVM. • One coat > material savings (app. 30 %), reduction in process time, reduction in inventory. Excellent pre-bake resistance (30 min at 160° C mixture depending). • Injection moulding at 200° C or even at higher temperatures. • Superior low temperature resistance / heat resistance (-50° C to 200° C). • Exceptional dynamic and static fatigue resistance. • Very good chemical resistance (petroleum, kerosene, mineral oils, hot glycols (160° C). • No chipping of the dried CILBOND ®24 while normal handling. • E.g. tank lining compounds, bridge bearings, automotive anti-vibration parts.	Sold as: Black liquid Packaging: CILBOND® 24 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 33C A/B

Chemical name: Polymer with additives and solvents
CAS Number: 108-10-1, 2530-83-8, 693-98-1, 108-95-2

Hazards identification:

CILBOND® 33CA

CILBOND® 33Cb

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• Two component adhesive system that must be mixed 1:1 to get a one coat system. • Suitable for bonding fluoroelastomer compounds of different hardnesses to a wide range of substrates including metals, thermoplastics, thermosets and fabrics. • Excellent resistance to high post-curing temperatures and harsh chemical environments. • Resists lubricants and transmission oils to 200° C, mild aqueous acid and mild alkalis to 100° C, solvents, brake fluids and glycols. • Excellent heat resistance at above 200° C (extended periods). • Will bond fluoroelastomers like DAI-EL®, Aflas®, Technoflon®, Fluorel®, Viton® (bisphenol or amine cured and even some peroxide cured fluoroelastomers and even fluorosilicones, especially if post cured. • Usable applications include oil-seals, shaft seals, gaskets, valve seals, rollers, hoses.	Sold as: Clear to amber liquid Packaging: CILBOND® 33C A/B is supplied in 1 l, 10 l, 250 ml trial samples are available.	Shelf Life: 24 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 36

Chemical name: Polymer with additives and solvents
CAS Number: 64-17-5, 67-56-1, 2530-83-8, 108-88-3

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One component, non-toxic ethanol-based system for bonding various peroxide-cured silicone, fluorosilicone, perfluoroelastomers, fluoropolymer, hydrogenated niltrile elastomers and some speciality EPDM compounds. • Fast-drying, chip resistant and non-blocking. • Suitable also for platinum cured silicones, a wide range of bisphenol and bisamine-cured fluoropolymers, acrylic / ACM and AEM compounds. • Bonds the above-mentioned compounds effectively to metal substrates including steel, stainless steel, aluminium and brass. • CILBOND® 36 will bond to engineering plastics, all types of polyamides and to glass and ceramics. • Can be used for a lot of moulding processes. • Very good resistance to long, high temperature post-cure time periods. • Components bonded with CILBOND® 36 show very good environmental resistance properties, like: Hot fluids (holt oils and fuels, hot water, hot glycols • Therefore CILBOND® 36 is preferred to manufacture Torsional Vibration Damper (TVD´s) and bushes, gaskets, valves, rollers, engine and suspensions mounts, oil / shaft seals	Sold as: Clear colourless liquid Packaging: CILBOND® 36 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® 82

Chemical name: Polymer with additives and solvents
CAS Number: 108-88-3, 9003-34-3, 3006-93-7, 1675-54-3

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• High performance Cover bonding Agent for a wide range of elastomers • Recommended for NR, SBR, CR, IR, NBR and XNBR, HNBR (sulphur or peroxide cured), BR, EPM, EPDM (sulphur or peroxide cured and silicone modified), IIR, CIIR and BIIR, ECO, CSM and ACSM, Vamac®, EVA / EVM, ACM, CPE, millable polyurethane (sulphur or peroxide cured) • Components covered with CILBOND® 82 have excellent resistance to dynamic and static fatigue. • Outstanding resistance to hot fluids, fuels, hydraulic fluids and glycols • In-service temperature from -50° C to +200° C • CILBOND® 82 can be used in demanding industries such as automotive and offshore producing components such as: Torsional Vibration Damper (TVD´s), Hydromounts, suspension mounts, pump linings, tank linings, pipe linings and coatings, hoses, rollers, other rubber to metal bonded components	Sold as: Black liquid Packaging: CILBOND® 82 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® R-7035

Chemical name: Polymer with additives and solvents
CAS Number: 108-10-1, 64742-95-6, 78-93-3, 108-46-3, 100-97-0, 1314-13-2, 105-11-3, 13463-67-7, 108-31-6

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One component rubber to substrate bonding agent recommended for the following elastomers: NR, SBR, CR, BR, IR, AEM, HNBR, ECO, CSM / ACSM, ACM, XNBR, EVM • Characterized by superior temperature resistance and bond retention from -50° C to over 200° C • Very good dynamic and static fatigue resistance • Resistance to mild acid and mild alkali media • Chemical resistance to petroleum spirit, kerosene, fuel oils, mineral oils, ethylene glycol / propylene glycol at high temperature, hot / boiling water • Outstanding salt-spray resistance as either a one-component system or as one part of a two-component system.	Sold as: Black liquid Packaging: CILBOND® R-7035 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

CILBOND® R-7085

Chemical name: Polymer with additives and solvents
CAS Number: 108-88-3, 13676-54-5, 3006-93-7, 1675-54-3, 1314-13-2

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• Rubber to fabric bonding agent • Specially for NR, SBR, NBR and XNBR, HNBR sulphur cured • Excellent adhesion to resorcinol formaldehyde latex (RFL)-treated fabrics • Finds uses in high performance timing belts with severe environments are present such as high temperatures and fluids	Sold as: Black liquid Packaging: CILBOND® R-7085 is supplied in 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Solvent based

CILBOND® R-7327

Chemical name: Polymer with additives and solvents
CAS Number: 64742-95-6, 78-93-3, 108-88-3, 108-46-3, 100-97-0, 1314-13-2, 7779-90-0, 108-31-6

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One component bonding system for high performance bonding to metal and plastics • Suitable for bonding the following elastomers: NR, SBR, AEM, EPDM • Exceptional dynamic and static fatigue resistance • Outstanding chemical resistance to: Petroleum spirit fuels, unleaded petrol, kerosene, fuel oils, mineral oils and synthetic ester turbo oils at high temperature, ethylene glycol and propylene glycol at high temperature, acids and alkali, hot and boiling water	Sold as: Black liquid Packaging: CILBOND® R-7327 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below –5° C and at max. +30° C.

Bonding agents

Water based

	Primer	Cover	One Coat	ACM	AEM Vamac® G series	AEM Vamac® DP series	IIR, Halo IIR	CR	CSM / ACSM	CPE	ECO	EPDM	NR / SBR (High Sulphur)	NR / SBR (Medium Sulphur)	NR / SBR (Low Sulphur)	BR / IR	PNR	NBR	XNBR	HNBR	PVC / NBR	Parel	VMQ (Peroxide cured)	VMQ (Pt / Pd cured)	FVMQ	FKM / FFKM (Peroxide cured)	FKM (Bisphenol / Bisamine Cured)	EVM	Heat Resistance: Max Temp. For 48 hours	Boiling Water Resistance: Hours	Glycol Resistance: Hours @ 160 °C	Salt Pray Testing: Hours to 4mm	Pre-bake Resistance: Minutes @ 160 °C
CILBOND® 62W			•																										450 °C	1,000 h	1,000 h	1,000 h	30 m
CILBOND® 62W			•																										180 °C	20 h	100 h	200 h	20 m
CILBOND® R-7264W			•																										210 °C	120 h	200 h	200 h	90 m
CILBOND® R-7290W		•	•																										250 °C	1,000 h	1,000 h	1,000 h	15 m
CILBOND® R-7300W			•																										250 °C	1,000 h	1,000 h	500 h	30 m
CILBOND® R-7296W / R-7290W	•	•																											250 °C	1,000 h	1,000 h	1,000 h	15 m
CILBOND® R-7296W / R-7300W	•	•																											250 °C	1,000 h	1,000 h	500 h	15 m

Highly recommended

Recommended

Can be used

Notes on Environmental Test Information

Heat Resistance: The highest temperature when parts for heated for 48 hours, whilst achieving ≥ 90 % failure within the rubber.

Boiling Water testing: No Rubber-Cement or Cement-Metal fail : Test halted at 1000 hours (1000 hours means no observed failure).

Hot Glycol Testing: Tests conducted at 160 °C and failure detected as blisters in bond-line and/or Cement-Metal failure.

Salt-Spray Resistance: DIN/ISO 9227 2006; time to show <4 mm edge failure with rubber bonded parts.

Pre-Bake Resistance: A typical maximum time parts can be heated, prior to moulding at 160 °C, in minutes - pre-bake resistance is also compound dependent.

Bonding agents

Water based

CILBOND® 62W

Chemical name: Polymer with additives and solvents
CAS Number: 100-97-0, 7779-90-0, 1314-13-2, 111-77-3, 64-17-5, 13463-67-7, 108-95-2, 8007-24-7

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One coat water-based system especially developed for compounds used in the Friction industries like After-Market Brake Pads and Original-equipment. • Bonds to all metals that are used in the manufacturing process for brake pads including Zn/Ni coatings • The benefits of this product are excellent static and dynamic fatigue resistance • The heat stability is beyond 300° C • Outstanding stability against fluids including water, oils and fuels (including diesel and synthetic mixtures) • Superior salt-spray resistance even compared to solvent-based systems • Pads produced with this compound also pass cyclic tests consisting of heating to 400° C before cooling in cold water followed by a salt spray test. • E.g. turbocharge hoses, silicone hoses, oil seals, shaft seals, gaskets, engine mounts, rollers	Sold as: Grey / black liquid Packaging: CILBOND® 62W is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Water based

CILBOND® 65W

Chemical name: Polymer with additives and solvents
CAS Number: 2768-02-7, 64-17-5, 1569-02-4, 67-56-1

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• Water-based one component bonding agent for silicone Rubber and peroxide cured fluoroelastomers • Suitable for HNBR´s and ACM compounds • Shows very good environmental resistance especially to high temperatures and lubricating and transmission oil above 200° C • These properties make CILBOND® 65W to an ideal compound in the production process of silicone hoses, oils seals, shaft seals, gaskets, engine mounts, Torsional Vibration Damper (TVD´s), rollers	Sold as: Milky emulsion Packaging: CILBOND® 65W is supplied in 1L, 25L, containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Water based

CILBOND® R-7264W

Chemical name: Polymer with additives and solvents
CAS Number: Not known

Hazards identification: Not classified as hazardous

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• Water based one coat bonding system specially for Silicone, FKM, AEM and peroxide-cured EPDM to a range of substrates • This material tolerates all moulding processes • Can even tolerate long post cure cycles but for temperatures higher than 190° C a step post cure process is recommended	Sold as: Milky emulsion Packaging: CILBOND® R-7264W is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

CILBOND® R-7290W

Chemical name: Polymer with additives and solvents
CAS Number: 9003-34-3, 7704-34-9, 13676-54-5, 1314-13-2, 1675-54-3

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• Water-based one component metal to Rubber bonding agent • Suitable for adhesion the following elastomers to metals and polar engineering plastics: NR, SBR, CR • Very good resistance against boiling water and hot glycol • Outstanding resistance to oils, fuels and even transmission fluids at up to 160° C • Very low VOC levels compared to solvent based systems • Developed for construction of suspension and engine mounts, stabilizer bars, seals and gaskets, tank linings, rollers, pump linings	Sold as: Grey / green liquid Packaging: CILBOND® R-7290W is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 6 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Water based

CILBOND® R-7296W

Chemical name: Polymer with additives and solvents
CAS Number: 779-90-0, 1314-13-2, 64-17-5, 770-35-4, 100-97-0, 67-56-1, 108-95-2

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• Water based Primer developed for used under cover coat bonding agents • Suitable for the following surfaces: Mild and stainless steel, Brass, Aluminium, galvanised / Zinc coated steel, chromated Zinc and phosphated steel • Also usable for polar plastics like nylon, polyesters, cellulosics, PPO, PPS, PES, PEEK, GRP / FRP, epoxies and phenolics etc. • Can be used in combination with the water-based cover coats CILBOND® 70W or CILBOND® R-7290W but also can be used under the solvent-based cover coat CILBOND® 80ET to bond NR, SBR, IR, BR, CR, IIR, EPDM, NBR, HNBR and Vamac®. • Excellent resistance to aggressive liquids like oils, brake fluids and glycols • Superior salt-water resistance compared to many solvent-based primers	Sold as: Dark grey liquid Packaging: CILBOND® R-7296W is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Water based

CILBOND® R-7300W

Chemical name: Polymer with additives and solvents
CAS Number: 9003-34-3, 7779-90-0, 1314-13-2, 64-17-5, 770-35-4, 100-97-0, 67-56-1, 108-95-2

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One coat water-based bonding agent for Rubber compounds to metal and plastics • It is recommended for the following elastomers: NR, SBR, CR, BR, IR, NBR, ECO, CSM / ACSM, ACM, XNBR, HNBR • Outstanding resistance to glycols at temperatures beyond 160° C for up to 1,000 hours • Excellent salt-water resistance compared to solvent-based products • Free from toxic heavy metals • Shows excellent heat resistance up to at least 200° C. • Exceptional boiling water resistance (NR / steel parts passed 1,000 hours in boiling water)	Sold as: Dark grey / green liquid Packaging: CILBOND® R-7300W is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 9 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Friction bonding

	water-based	solvent-based	One Coat	Two-Coat	Brake Pads	Brake Shoes	Original Equipment	After Market	Clutches	Transmission Discs	Heat Resistance: Max Temp. For 48 hours	Boiling Water Resistance: Hours	Glycol Resistance: Hours @ 160 °C	Salt Pray Testing: Hours to 4mm	Pre-bake Resistance: Minutes @ 160 °C
CILBOND® 62W	■		■		•		•	•			450 °C	1,000h	1,000h	1,000h	30m
CILBOND® R-7159	■		■				•	•			300 °C				
CILBOND® R-7189	■		■								300 °C				
CILBOND® R-7323W	■		■		•	•					300 °C				

CILBOND® 62W *See water based bonding systems*

Chemical name: Polymer with additives and solvents
CAS Number: 100-97-0, 7779-90-0, 1314-13-2, 111-77-3, 64-17-5, 13463-67-7, 108-95-2, 8007-24-7

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One coat water-based system especially developed for compounds used in the Friction industries like After-Market Brake Pads and Original-equipment. • Bonds to all metals that are used in the manufacturing process for brake pads including Zn/Ni coatings • The benefits of this product are excellent static and dynamic fatigue resistance • The heat stability is beyond 300° C • Outstanding stability against fluids including water, oils and fuels (including diesel and synthetic mixtures) • Superior salt-spray resistance even compared to solvent-based systems • Pads produced with this compound also pass cyclic tests consisting of heating to 400° C before cooling in cold water followed by a salt spray test. • E.g. turbocharge hoses, silicone hoses, oil seals, shaft seals, gaskets, engine mounts, rollers	Sold as: Grey / black liquid Packaging: CILBOND® 62W is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Friction bonding

CILBOND® R-7159

Chemical name: Polymer with additives and solvents
CAS Number: 100-97-0, 7779-90-0, 1314-13-2, 64-17-5, 111-77-3, 13463-67-7, 108-95-2, 8007-24-7, 4420-74-0, 67-56-1, 50-00-0

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One coat water-based system as a high viscosity version of CILBOND® 62W (for roller application) • Recommended for application in the Friction industries (After-Market brake pads and OE products) • Bonds to all metals used in the manufacturing of brake pads including Zn/Ni coatings • This product is characterized by excellent static or dynamic fatigue resistance • It is heat resistant above 300° C • Outstanding resistance to fluids including water, oils and fuels (including diesel and synthetic mixtures such as methanol and toluene) aven at high temperatures • Tack-free dried film, heat activation (around 100 °C-110 °C) will give a certain tack, important for the friction material when material is pushed together.	Sold as: Grey / black mobile liquid Packaging: CILBOND® R-7159 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Friction bonding

CILBOND® R-7189

Chemical name: Polymer with additives and solvents
CAS Number: 7779-90-0, 1314-13-2, 1569-01-3, 100-97-0, 64-17-5, 770-35-4, 108-95-2, 941-216-3, 67-56-1

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One coat bonding system for compounds used in the Fricton industry to build Original Equipment (OE) and After-Market brake pads • Bonds to all metal used to make brake pads including Zn/Ni coatings • Shows excellent static and dynamic fatigue resistance • Heat resistance over 350° C • Excellent resistance to fluids including water, oils and fuels (including diesel and synthetic mixtures such as methanol and toluene) even at high temperatures • Outstanding salt-spray resistance compared to solvent-based systems	Sold as: Grey / black mobile liquid Packaging: CILBOND® R-7189 is supplied in 10 l, 25 l, 200 l containers. 250 ml trial samples are available.	Shelf Life: 12 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

Friction bonding

CILBOND® R-7323W

Chemical name: Polymer with additives and solvents
CAS Number: 100-97-0, 64-17-5, 770-35-4, 7779-90-0, 1314-13-2, 13463-67-7, 108-95-2, 8007-24-7, 67-56-1, 50-00-0

Hazards identification:

Supplier: H.B. Fuller

Technical data:	Sold as / Packaging:	Shelf life / Special storage conditions:
• One coat water-based system • High viscose material for cold press bonding (better flow and potential "grab" at lower press temperatures, press at 70 °C for seconds and post-cure at higher temperatures 200-220 °C) – application: e.g. brake pads and shoes, including Zn/Ni coatings • Extreme temperatures from -60 °C to >335 °C; salt spray (1,000 hours) to DIN 50021; hot glycol immersion: 1,000 hours @ 160 °C • Excellent static and dynamic fatigue resistance • Outstanding salt-spray resistance even compared to solvent-based systems • Heat resistance over 500° C	Sold as: Viscous grey liquid Packaging: CILBOND® R-7323W is supplied in 10 l, 25 l containers. 250 ml trial samples are available	Shelf Life: 6 months from date of manufacture Storage conditions: Dry, no direct sunlight, store not below 0° C and at max. +30° C.

Bonding agents

CILBOND®-Series

Chemical name: -
CAS Number: Various

Hazards identification: Depending on the type, classification differs

Supplier: H.B. Fuller

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Solvent or water based bonding agents for various applications (See overview)	Sold as: Liquid Weight per container: 10 l, 25 l or 200 l Weight per pallet: depending on type Pallet type: Euro	Shelf life: 6 to 24 months depending on type Special storage conditions: Cool and dry, other requirements (such as o direct sunlight, max. temperature) vary depending on the type used

	Package size				
Grade [-]	200 [litres]	25 [litres]	10 [litres]	1 [litres]	Shelf Life [month]
CILBOND® 10E	•	•	•		18 month
CILBOND® 12E	•	•	•		12 month
CILBOND® 24	•	•	•		12 month
CILBOND® 33C PART A			•	•	24 month
CILBOND® 33C PART B			•	•	24 month
CILBOND® 36		•	•	•	12 month
CILBOND® 62W	•	•	•		12 month
CILBOND® 65W		•		•	12 month
CILBOND® 80ET	•	•	•		12 month
CILBOND® 89ET	•	•	•		12 month
CILBOND® 82	•	•	•		12 month
CILBOND® R-7035	•	•	•		12 month
CILBOND® R-7085	•	•			12 month
CILBOND® R-7327	•	•	•		12 month
CILBOND® R-7159	•	•	•		12 month
CILBOND® R 7189	•	•	•		12 month
CILBOND® R-7264W		•	•		18 month
CILBOND® R-7290W		•	•		6 month
CILBOND® R-7296W	•	•	•		12 month
CILBOND® R-7300W	•	•	•		9 month
CILBOND® R-7323W		•	•		6 month

• ready for delivery

Coupling agents

Silanes

Organofunctional silanes are hybrid compounds that combine the functionality of a reactive organic group with the inorganic functionality of an alkyl silicate in a single molecule. This special property allows them to be used as molecular bridges between inorganic materials and organic polymers. Silanes serve as coupling agents between the elastomer matrix and silica and/or silica-containing fillers to improve physical and mechanical properties.

Norsil 100

Chemical name: Bis(3-triethoxysilylpropyl)tetrasulfide
CAS Number: 40372-72-3

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Reactive, sulfur-functional silane • Acts as an adhesion promoter between the silanol groups of fillers and the rubber matrix in sulfur cross-linked rubber articles • Improves physical properties, abrasion and wear resistance in e.g. tires, rollers, hoses, shoe soles • Ethanol produced during the reaction evaporates during the mixing process • Norsil 100 can be dosed between 1 and 8 phr (depending on fillers)	Sold as: Clear liquid Weight per container: 25 kg drum Weight per pallet: 500 kg Pallet type: CP1	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight or high-energy radiation

Coupling agents

Silanes

Norsil 50

Chemical name: Bis(3-triethoxysilylpropyl)tetrasulfide
CAS Number: 40372-72-3

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Molecular dispersion of TESPT in a thermoplastic carrier material • Due to the encapsulation, the thermoplastic carrier protects the TESPT from external influences and ensures a high stability • It contains neither mineral fillers nor carbon blacks (which could cause insufficient dispersion) • Improves the physical properties and acts as an adhesion promoter between rubber and silica (as well as other silica-containing fillers) • The ethanol produced during the reaction evaporates during the mixing process • Norsil 50 can be dosed between 2 and 16 phr (depending on fillers)	Sold as: Yellowish pastilles Weight per container: 20 kg carton Weight per pallet: 520 kg Pallet type: CP1	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight or high-energy radiation

Coupling agents

Silanes

Deolink Amino TE 45 DL

Chemical name: 3-Aminopropyltriethoxysilanes
CAS Number: 919-30-2

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Putty activator/adhesion promoter • Dry-liquid: 45 % 3-aminopropyltriethoxysilane on mineral fillers • Organofunctional silane preparation that creates a bond between polymer and inorganic substrates/fillers • Suitable for various applications such as coatings, sealants and compounding • Improves the dispersion of the fillers and the bond between polymer and fillers to improve physical and mechanical properties • FDA/BfR-approved • Ash (2 hours/950 °C): 34 % • Deolink Amino TE 45 DL can be dosed at between 1 and 6 phr	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: 120 kg Pallet type: Euro	Shelf life: 6 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink Amino TE-100

Chemical name: 3-Aminopropyltriethoxysilanes
CAS Number: 919-30-2

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Fillers activator/adhesion promoter • Organofunctional silane preparation that creates a bond between polymer and inorganic substrates/fillers • Suitable for various applications such as coatings, sealants and compounding • Improves the dispersion of the fillers and the bond between polymer and fillers to improve physical and mechanical properties • FDA/BfR-approved • Purity: min. 97 % • Density at 25 °C: 0.93-0.97 g/cm³ • Deolink Amino TE 45 DL can be dosed between 1 and 6 phr	Sold as: Colorless to slightly yellowish liquid Weight per container: 25 kg canister / 180 kg / 190 kg / 200 kg drum Weight per pallet: 4 drums per pallet Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink Methacryl TM-100

Chemical name: Methacryloxy-propyltrimethoxysilane
CAS Number: 2530-85-0

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Fillers activator/adhesion promoter • Radical bonding via the double bond of the methacrylate group to polyesters, polyurethanes or acrylates, as well as to the trimethoxysilyl group with the free -OH groups from fillers/substrates • Adhesion promoter that improves the mechanical properties of polyester composites • Used as copolymer in combination with acrylate or methacrylate monomers • BfR-approved • Purity: min. 98 % • Density at 25 °C: 1.02-1.06 g/cm³ • Dosage between 0.5 and 4 phr (in relation to the active white fillers) and 0.5 to 2 % (in relation to the total amount)	Sold as: Colorless to slightly yellowish liquid Weight per container: 25 kg canister / 200 kg drum Weight per pallet: 4 drums per pallet Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink MX

Chemical name: Octylthiol-thio-propyltriethoxysilanes
CAS Number: 220727-26-4

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • 50 % in PE wax offers provides excellent protection against moisture and other environmental influences • Alternative to mercaptosilanes (which often carry an unpleasant odor) with lower risk of scorch and less inherent odor • Chemical bonding between polymer and fillers improves physical and mechanical properties • Addition of fillers and higher mixing temperatures (120-160 °C) recommended • Sulfur cross-linking compounds with active light-colored fillers • Used for shoe soles, industrial rollers, conveyor belts, industrial floors • Sulfur content: 3.8-4.8 % • Drop point: 97-111 °C • Deolink MX can be dosed at between 1 and 8 phr (depending on the fillers)	Sold as: White pastilles Weight per container: 20 kg cartons with PE inner bag Weight per pallet: 480 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink MX-100

Chemical name: Octylthiol-thio-propyltriethoxysilanes
CAS Number: 220727-26-4

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Alternative to mercaptosilanes (which often carry an unpleasant odor) with lower risk of combustion and less inherent odor • Bond between polymer and fillers improves physical and mechanical properties • Addition of fillers and higher mixing temperatures (120-160 °C) recommended • Sulfur cross-linking mixtures with active light-colored fillers • Used for shoe soles, industrial rollers, conveyor belts, industrial floors • Sulfur content: 7.6-9.6 % • Density at 25 °C: 0.94-0.98 g/cm³ • Dosage between 0.5 and 4 phr (in relation to the active white fillers) and 0.5 to 2 % (in relation to the total amount)	Sold as: Colorless to slightly yellowish liquid Weight per container: 195 kg drum Weight per pallet: 4 drums per pallet Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink TESPT

Chemical name: Bis(3-triethoxisilylpropyl)tetrasulfide = TESPT
CAS Number: 40372-72-3

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • 50 % in EVA wax mixture offers excellent protection against moisture and other environmental influences • Bifunctionality: connects the tetrasulfane group with the rubber and the ethoxy group with the silanol groups of the fillers • Chemical bonding between the polymer and fillers improves physical and mechanical properties (tear strength, modulus, abrasion) • Addition of fillers and higher mixing temperatures (120-140 °C) recommended • Mainly sulfur cross-linking compounds • Sulfur content: 10-13 % • Drop point: 67-77 °C • Deolink TESPT can be dosed between 2 and 16 phr (depending on fillers)	Sold as: Yellow pastilles Weight per container: 20 kg box Weight per pallet: 640kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink TESPT-100

Chemical name: Bis(3-triethoxisilylpropyl)tetrasulfide = TESPT
CAS Number: 40372-72-3

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G. COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Bifunctionality: connects the tetrasulfane group with the rubber and the ethoxy group with the silanol groups of the fillers • Chemical bonding between the polymer and fillers improves physical and mechanical properties (tear strength, modulus, abrasion) • Addition of fillers and higher mixing temperatures (120-140 °C) recommended • Mainly sulfur cross-linking compounds • Sulfur content: 10-13 % • Drop point: 67-77 °C • Deolink TESPT-100 can be dosed between 1 and 8 phr (depending on fillers)	Sold as: Dark yellow liquid Weight per container: 200 kg drum Weight per pallet: 4 drums per pallet Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Deolink VE

Chemical name: Polysiloxane containing vinyl and ethoxy groups
CAS Number: 2550-02-9

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G. COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Polysiloxane containing vinyl and ethoxy groups • 50 % in wax-polymer mixture offers excellent protection against moisture and other environmental influences • Oligomeric vinyl silane for peroxide cross-linking • Substitute for conventional vinyl silane • Chemical bonding between polymer and fillers improves physical and mechanical properties • Does not form methoxyethanol • BfR-approved • Drop point: 70-80 °C • Deolink VE can be dosed between 1 and 6 phr (depending on fillers)	Sold as: White pastilles Weight per container: 20 kg carton in PE inner bag Weight per pallet: 480 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

Deolink Vinyl

Chemical name: Tris(2-methoxyethoxy)vinylsilane
CAS Number: 1067-53-4

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • 50 % in wax/polymer mixture offers excellent protection against moisture and other environmental influences • Methoxyethanol produced during reaction process evaporates during mixing and vulcanization • Improves the physical properties of peroxide cross-linked compounds, e.g. cable sheathing • Electrical properties are improved (as opposed to with silane-free compounds) • For radical and sulfurous cross-linking • BfR-approved • Drop point: 67-77 °C • Deolink Vinyl can be dosed between 1 and 6 phr (depending on the fillers)	Sold as: White pastilles Weight per container: 20 kg carton in PE inner bag Weight per pallet: 640 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Deolink Vinyl TE-100

Chemical name: Vinyltriethoxysilane
CAS Number: 78-08-0

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Reactive vinyl and silanol groups (formed after hydrolysis) form chemical bonds to the polymer, to each other and to the fillers • Production of silane-modified PE, modification of fillers • Does not form methoxyethanol • BfR-approved • Silane content: min. 95 % • Density at 20 °C: 0.89-0.93 g/cm³ • Dosage between 0.5 and 5 phr (in relation to the active white fillers) and 0.5 to 2.5 % (in relation to the total amount)	Sold as: Colorless liquid Weight per container: 25 kg canister / 190 kg drum Weight per pallet: 4 drums per pallet Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

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Coupling agents

Silanes

Deolink Vinyl-100

Chemical name: Tris(2-methoxyethoxy)vinylsilanes
CAS Number: 1067-53-4

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Methoxyethanol produced during reaction process evaporates during mixing and vulcanization • Improves the physical properties of peroxide cross-linked compounds, e.g. cable sheathings • Electrical properties are improved (as opposed to with silane-free compounds) • For radical and sulfurous cross-linking • BfR-approved • Silane content: min. 95 % • Density at 25 °C: 1.02-1.06 g/cm³ • Dosage between 0.5 and 5 phr (in relation to the active white fillers) and 0.5 to 2.5 % (in relation to the total amount)	Sold as: Colorless to slightly yellowish liquid Weight per container: 25 kg canister / 200 kg drum Weight per pallet: 4 drums per pallet Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Deolink VO

Chemical name: Polysilane, contains vinyl, propyl and ethoxy groups
CAS Number: None, as a mixture

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Polysiloxane (contains vinyl, propyl and ethoxy groups) • 50% in wax/polymer mixture offers excellent protection against moisture and environmental influences • Methoxyethanol produced during reaction process evaporates during mixing and vulcanization • Electrical properties are improved (as opposed to with silane-free blends) • Substitute for conventional vinyl silane • BfR-approved • Drop point: 70-80 °C • Deolink VO can be dosed between 1 and 6 phr (depending on the fillers)	Sold as: White pastilles Weight per container: 20 kg carton Weight per pallet: 480 kg Pallet type: Euro	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

FamaSil FR-VM

Chemical name: Synergistic combination on organofunctional silanes (vinyl and methacrylic) and polymeric processing promoter

CAS Number: none, as a mixture

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Synergistic combination of organofunctional silanes (vinyl and methacrylic) and polymeric processing aid • Due to its formulation, often outperforms conventional silanes through superior wettability and coupling properties • Chemical bond between polymer and fillers improves physical and mechanical properties • Designed for peroxide crosslinking and highly filled flame retardants in particular • Does not form methoxyethanol • Continuous supply of nitrogen recommended during processing • Silane content: min. 95 % • Density at 25 °C: 0.88-0.96 g/cm³ • FamaSil FR-VM can be dosed between 0.5 and 2 phr	Sold as: Colorless liquid Weight per container: 25 kg canister / 190 kg drum Weight per pallet: 750 kg Pallet type: Euro	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Coupling agents

Silanes

FamaSil DL-VM

Chemical name: Synergistic combination on organofunctional silanes (vinyl and methacrylic) and polymeric processing promoter on mineral carrier (silica)

CAS Number: 78-08-0, 112945-52-5

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coupling agent • Dry liquid: synergistic combination of organofunctional silanes (vinyl and methacrylic) and polymeric processing aids on mineral carrier (ATH/silica) • Due to its formulation, often outperforms conventional silanes through superior wettability and coupling properties • Chemical bond between polymer and fillers improves physical and mechanical properties • Designed for peroxide crosslinking, highly filled flame retardants in particular • Does not form methoxyethanol • Silane content: 50 % • FamaSil DL-VM can be dosed between 2 and 6 phr	Sold as: White powder Weight per container: 20 kg box Weight per pallet: 480 kg Pallet type: Euro	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Blowing agents

Blowing or foaming agents are special chemicals or substances that are used to create a cellular structure in foaming processes. Lightweight construction is becoming more and more important in the automotive industry as well as other sectors, and blowing agents reduce the specific weight of components to lead to material savings. In addition to chemical (exothermic and endothermic) blowing agents, there are also microspheres with different decomposition and expansion temperatures available on the market.

Tracel® ADC 5/90 P

Chemical name: Azodicarbonamide
CAS Number: 123-77-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 90 % • Paste in mineral oil • Decomposition temperature: Approx. 200 °C • Effective gases: Nitrogen, carbon monoxide, carbon dioxide and ammonia • Normally dosed at 1-12 %	Sold as: Yellow, crumbly paste Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Tracel® ADC 3/75 EPR-1

Chemical name: Azodicarbonamide
CAS Number: 123-77-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 75 % • Bound in EPR • Decomposition temperature: Approx. 200 °C • Effective gases: Nitrogen, carbon monoxide, carbon dioxide and ammonia • Normally dosed at 1-15 %	Sold as: Yellow granules Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

Tracel® K 3/95

Chemical name: Azodicarbonamide; P-toluenesulfinic acid zinc salt
CAS Number: 123-77-3; 24345-02-6

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Activated azodicarbonamide (oil-bound) • Decomposition temperature: Approx. 140 °C • Effective gases: Nitrogen, carbon monoxide, carbon dioxide and ammonia • Normally dosed at 1-8 %	Sold as: Yellow, slightly lumpy powder Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Tracel® K5/95

Chemical name: Azodicarbonamide; zinc benzenesulfinate dihydrate
CAS Number: 123-77-3, 24308-84-7

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Activated azodicarbonamide (oil-bound) • Decomposition temperature: Approx. 130 °C • Effective gases: Nitrogen, carbon monoxide, carbon dioxide and ammonia • Normally dosed at 1-8 %	Sold as: Yellow, slightly lumpy powder Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

Tracel® OBSH 160 NER

Chemical name: 4,4'-Oxybis (benzenesulfonyl hydrazide)
CAS Number: 80-51-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Decomposition temperature: Approx. 160 °C • Effective gases: Nitrogen, water • Normally dosed at 0.5-15 %	Sold as: White powder Weight per container: 20 kg carton Weight per pallet: 540 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Tracel® OBSH 75 K P

Chemical name: 4,4'-Oxybis (benzenesulfonyl hydrazide)
CAS Number: 80-51-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 75 % • Paste in mineral oil • Decomposition temperature: Approx. 160 °C • Effective gases: Nitrogen, water • Normally dosed at 1-15 %	Sold as: White, crumbly paste Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

Tracel® OBSH 80 P-RW

Chemical name: 4,4'-Oxybis (benzenesulfonyl hydrazide)
CAS Number: 80-51-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 80 % • Decomposition temperature: Approx. 160 °C • Effective gases: Nitrogen, water • Normally dosed at 1-5 %	Sold as: White, crumbly paste Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Tracel® OBSH 75 EPR-1

Chemical name: 4,4'-Oxybis (benzenesulfonyl hydrazide)
CAS Number: 80-51-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 75 % • Bound in EPDM rubber • Decomposition temperature: Approx. 160 °C • Effective gases: Nitrogen, water • Normally dosed at 1-5 %	Sold as: White, crumbly paste Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

Tracel® SR 165/75 K

Chemical name: Azodicarbonamide; 4-Methylbenzenesulfonhydrazide
CAS Number: 123-77-3; 1576-35-8

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Modified azodicarbonamide • Blowing agent content: 75 % • Paste in mineral oil • Decomposition temperature: Approx. 190 °C • Effective gases: Nitrogen, carbon monoxide, carbon dioxide, water, ammonia • Normally dosed at 1-15 %	Sold as: Yellow, crumbly paste Weight per container: 20 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Tracel® TSH 75 K 1 P

Chemical name: 4-Methylbenzenesulfonhydrazide
CAS Number: 1576-35-8

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 75 % • Paste in mineral oil • Decomposition temperature in rubber: Approx. 110 °C • Effective gases: Nitrogen, water • Normally dosed at 1-5 %	Sold as: White, crumbly paste Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

Tracel® TSH 90 DL

Chemical name: 4-Methylbenzenesulfonhydrazide
CAS Number: 1576-35-8

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Blowing agent content: 90 % • Pasted with mineral oil • Decomposition temperature: Approx. 145 °C • Effective gases: Nitrogen, water • Normally dosed at 1-15 %	Sold as: White, crumbly powder Weight per container: 25 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

UNICELL H

Chemical name: Toluol-4-sulfonohydrazid
CAS Number: 1576-35-8

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Decomposition temperature: Approx. 145 °C • Effective gases: Nitrogen and water • Normally dosed at 0.5-12%	Sold as: White powder Weight per container: 20 kg carton (with PE lining) Weight per pallet: 540 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

UNICELL D 200 A

Chemical name: Azodicarbonamide
CAS Number: 123-77-3

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blowing agent for use in natural and synthetic rubber • Exothermic decomposition process • Decomposition temperature: Approx. 210 °C • Effective gases: Nitrogen, carbon monoxide, carbon dioxide and ammonia • Normally dosed at 1-15 %	Sold as: Yellow powder Weight per container: 20 kg carton (with PE lining) Weight per pallet: 540 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

UNICELL BM

Chemical name: Zinc benzenesulfinate dihydrate
CAS Number: 24308-84-7

Hazards identification:

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Activator for azodicarbonamide/vulcanization accelerator • Residue on ignition: Approx. 23 % • Melting point: Approx. 230 °C • Normally dosed at 5-20 % as an activator related to ADC • Normally dosed at 0.3-0.5 % as a vulcanization accelerator	Sold as: White powder Weight per container: 20 kg carton (with PE lining) Weight per pallet: 800 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry

Blowing agents

Tracel® MB 612 X

Chemical name: 2-Methylbutane
CAS Number: 201-142-8

Hazards identification: Not classified as hazardous

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Physical blowing agent encapsulated in a thermoplastic polymer shell • Expandable microspheres for fine-cell, low-density foams • Temperature of expansion: Approx. 120 °C • Maximum temperature stress: Approx. 170 °C • Processing in EPDM and NBR • Normally dosed at 3-5 phr	Sold as: Powder Weight per container: 20 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Tracel MB 613 XF

Chemical name: 2-Methylbutane
CAS Number: 201-142-8

Hazards identification: Not classified as hazardous

Supplier: Tramaco

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Expandable microspheres for fine-cell, low-density foams • Physical blowing agent encapsulated in a thermoplastic polymer shell • Temperature of expansion: Approx. 130 °C • Maximum temperature stress: Approx. 165 °C • Processing in EPDM and NBR • Normally dosed at 3-5 phr	Sold as: Powder Weight per container: 20 kg carton (with PE lining) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, no direct sunlight

Coagents

Coagents are usually polyunsaturated organic compounds that react rapidly with radicals to form more stable radicals. They suppress crosslinking-inactive side reactions and increase crosslinking density.

Norlink TAIC 100

Chemical name: Triallyl isocyanurate
CAS Number: 1025-15-6

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Liquid coagent for crosslinking with peroxide-curing polymers • EPDM, CM, EVA, FPM and highly saturated NBR • Triazine with three allyl groups • Two different grades available • TAIC 100 > 98 % purity • Increases crosslinking density in peroxide-cured rubber compounds • Improves physical properties • TAIC only permits a moderate acceleration of the vulcanization rate but forms a very heat-stable network • TAIC 100 is the precursor for our Norlink TAIC 70 KS + CS • Coagens for Norperox BIPB-40; Norlink TAIC is normally dosed at up to 5 phr	Sold as: > 25 °C slightly yellowish liquid, < 25 °C crystalline Weight per container: 200 kg drum, filling in 24 kg containers possible Weight per pallet: 800 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, > 25 °C slightly yellowish liquid, < 25 °C crystalline. Use of a drum preheater recommended.

Norlink TAIC 100 LB

Chemical name: Triallyl isocyanurate
CAS Number: 1025-15-6

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Liquid coagent for crosslinking with peroxide-curing polymers • EPDM, CM, EVA, FPM and highly saturated NBR • Triazine with three allyl groups • Two different grades available • TAIC 100 LB >95 % purity • Increases crosslink density of peroxide crosslinked rubber compounds and improves physical properties • TAIC only permits a moderate acceleration of the vulcanization rate but forms a very heat-stable network • TAIC 100 LB is the precursor for our Norlink TAIC 70 KSB. • Coagens for Norperox BIPB-40; Norlink TAIC is normally dosed at up to 5 phr	Sold as: > 25 °C slightly yellowish liquid, < 25 °C crystalline Weight per container: 200 kg drum Weight per pallet: 800 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, > 25 °C slightly yellowish liquid, < 25 °C crystalline. Use of a drum preheater recommended.

Coagents

Norlink TAIC 70 CS

Chemical name: Triallyl isocyanurate + mineral carrier calcium silicate
CAS Number: 1025-15-6, 1344-95-2

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for crosslinking with peroxide-curing polymers • EPDM, CM, EVA, FPM and highly saturated NBR • Triazine with three allyl groups (active content: 70 %) • Lump-free and free-flowing on a mineral substrate • CS = calcium silicate TAIC with a purity of > 98 % • Increases cross-linking density • In supported state, storage above 25 °C is not necessary (crystallization only in pure state)	Sold as: White-grey powder (lump-free and free-flowing) Weight per container: 20 kg carton Weight per pallet: 480 kg Pallet type: CP2	Shelf life: 24 months Special storage conditions: Cool and dry

Norlink TAIC 70 KS

Chemical name: Triallyl isocyanurate + mineral carrier silica
CAS Number: 1025-15-6, 7631-86-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for crosslinking with peroxide-curing polymers • EPDM, CM, EVA, FPM and highly saturated NBR • Triazine with three allyl groups (active content: 70 %) • Lump-free and free-flowing on a mineral carrier material • KS = silica • TAIC with a purity of > 98 % • Increases cross-linking density • In supported state, storage above 25 °C is not necessary (crystallization only in pure state)	Sold as: White-grey powder (lump-free and free-flowing) Weight per container: 20 kg carton Weight per pallet: 480 kg Pallet type: CP2	Shelf life: 24 months Special storage conditions: Cool and dry

Coagents

Norlink TAIC 70 KSB

Chemical name: Triallyl isocyanurate + mineral carrier silica
CAS Number: 1025-15-6, 7631-86-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for crosslinking with peroxide-curing polymers • EPDM, CM, EVA, FPM and highly saturated NBR • Triazine with three allyl groups (active content: 70 %) • Lump-free and free-flowing on a mineral carrier material • KSB = silica TAIC with a purity of approx. 95 % (low-cost product) • Basis: Norlink 100 LB • Increases cross-linking density • In supported state, storage above 25 °C is not necessary (crystallization only in pure state)	Sold as: White-grey powder (lump-free and free-flowing) Weight per container: 20 kg carton Weight per pallet: 480 kg Pallet type: CP2	Shelf life: 24 months Special storage conditions: Cool and dry

Norlink TMAIC

Chemical name: Trimethallyl isocyanurate
CAS Number: 6291-95-8

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for cross-linking with peroxide-curing polymers • Used primarily with FKM for economic reasons • Superior to cyanurates such as TAC and TAIC in terms of temperature resistance • Increased cross-linking density leads to improved strength, modulus and compression set (significantly lower than TAIC in extrusion applications, however) • Aging and chemical resistance also show improvement • Norlink TMAIC is typically dosed at up to 5 phr	Sold as: White crystalline powder Weight per container: 15 kg drum Weight per pallet: 600 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Cool and dry, < 30 °C

Coagents

Norlink TMPTMA 70 KS

Chemical name: Trimethylolpropane trimethacrylate + mineral carrier silica
CAS Number: 3290-92-4, 7631-86-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for crosslinking with peroxide-curing polymers • EPDM, CM, EVA, FPM and highly saturated NBR • Active ingredient content: 70 % • Lump-free and free-flowing on a mineral carrier material • KS = silica • Increased cross-linking density leads to improved strength, modulus and compression set • TMPTMA is also available in pure form as a liquid • Coagent for Norperox BIPB-40; Norlink TMPTMA is normally dosed at up to 5 phr	Sold as: White crystalline powder (free-flowing) Weight per container: 20 kg carton Weight per pallet: 540 kg Pallet type: CP2	Shelf life: 24 months Special storage conditions: Cool and dry

Norlink ZDA

Chemical name: Zinc diacrylate
CAS Number: 14643-87-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for cross-linking with peroxide-curing polymers • CSP is used in EPDM, H-NBR, NBR, SBR, BR, VMQ, NR, etc. • ZDA increases crosslinking density for higher tensile strength, tear strength, modulus and abrasion resistance • Improves tear strength and abrasion properties • Increases modulus • Supports metal adhesion, even in S-crosslinked compounds • Used to impregnate fabrics and/or cords to increase adhesive properties e.g. in V-belts and toothed belts • Crosslinkers for very hard (Shore D) elastomer compounds, e.g. HNBR for roller coverings • Norlink ZDA is dosed at up to 4 phr	Sold as: White powder Weight per container: 25 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Coagents

Norlink ZDMA

Chemical name: Zinc dimethacrylate
CAS Number: 13189-00-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for crosslinking mainly in peroxide-cured polymers • ZDMA is used in EPDM, H-NBR, NBR, SBR, BR, VMQ, NR, etc. • ZDMA increases cross-linking density for higher tensile strength, tear strength, modulus and abrasion resistance • Improves rubber-metal adhesion in both peroxide-crosslinked and sulfur-crosslinked compounds • Used to impregnate fabrics and/or cords to increase adhesive properties e.g. in V-belts and timing belts • Crosslinkers for very hard (Shore D) elastomer compounds, e.g. HNBR for roller coverings. • Norlink ZDMA is normally dosed at up to 4 phr (depending on the polymer used)	Sold as: White powder Weight per container: 25 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Visiomer

1,3-BDDMA ***Chemical name:*** 1,3-Butandioldimethacrylat ***CAS Number:*** 1189-08-8
1,4-BDDMA ***Chemical name:*** 1,4-Butandioldimethacrylat ***CAS Number:*** 2082-81-7
EGDMA ***Chemical name:*** Ethylenglykoldimethacrylat ***CAS Number:*** 97-90-5
TMPTMA ***Chemical name:*** Trimethylolpropane trimethacrylate ***CAS Number:*** 3290-92-4

Hazards identification: Not classified as hazardous

Supplier: Evonik

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Coagent for crosslinking with peroxide-curing polymers • VISIOMER increases crosslinking density for higher tensile strength, tear strength, modulus and abrasion resistance • Alternatively, less peroxide can be used • Acts as a plasticizer; at high dosage, compounds with high Shore hardness and good processability can be produced • Coagent for Norperox BIPB-40	Sold as: Clear to slightly yellowish liquid Weight per container: 180 kg or 200 kg drum Weight per pallet: 720 kg or 800 kg per pallet (4 drums) Pallet type: CP3	Shelf life: 6 months Special storage conditions: Cool and dry, < 30 °C

Crosslinkers

Our broad portfolio of different cross-linking systems is suitable for a wide range of polymers. Depending on the application, properties such as cross-linking speed and degree can be individually adjusted.

Aminic crosslinkers

Aminic cross-linking systems are usually used with FKM, ACM, AEM or HNBR. HMDC benefits both CR and BAPP (active ingredient of Norcure 1313), in turn offering advantages in terms of dynamic component behavior. Depending on the polymer used, we recommend powder or polymer-bound grades.

Norcure HMDC 70 N

Chemical name: Hexamethylene diamine carbamate
CAS Number: 143-06-6

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Crosslinkers for ACM, AEM and FKM (for elastomers reacting with amines) • 70 % preparation (granules) applied on ACM • Improved mixing behavior • Viscosity ML 1+4 100 °C: 60 • Problem of bubble formation significantly lower than with powder • Norcure HMDC 70 N is usually dosed at 1-3 phr	Sold as: White-grey granules Weight per container: 20 kg carton Weight per pallet: 340 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Norcure HMDC

Chemical name: Hexamethylene diamine carbamate
CAS Number: 143-06-6

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Crosslinkers for ACM, AEM and FKM (for elastomers reacting with amines) • Norcure HMDC is usually dosed at up to 3 phr	Sold as: White powder Weight per container: 20 kg drum Weight per pallet: 400 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Crosslinkers

Aminic crosslinkers

Norcure HMDC-I

Chemical name: Hexamethylene diamine carbamate
CAS Number: 143-06-6, 14338-82-0

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Crosslinkers for ACM, AEM and FKM (for elastomers reacting with amines) • 90 % preparation with plasticizer, resulting in a dust-free product • Norcure HMDC-I is usually dosed at 0.9-2.2 phr	Sold as: White powder Weight per container: 20 kg drum Weight per pallet: 200 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Norcure 1313-50 N

Chemical name: 2,2-Bis[4-(4-aminophenoxy)phenyl]propene
CAS Number: 13080-86-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Amine crosslinkers for acrylic rubber (AEM, ACM) and HNBR • Very good choice for applications in which the end material is exposed to high continuous service temperatures • Masterbatch of BAPP in ACM • Aromatic structure of BAPP significantly increases scorch resistance, tensile strength and elongation at break compared to HMDC. Greater compression set is also achieved. • In the low temperature range, properties are less pronounced than HMDC • Temperatures during mixing should not exceed 130 °C • Norcure 1313-50 N is usually dosed at up to 2 phr	Sold as: Black granules Weight per container: 20 kg box Weight per pallet: 480 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry, no direct sunlight

Crosslinkers

Bisphenolic crosslinkers

Our bisphenolic crosslinkers for FKM, Fluorocure, are suitable for the customised crosslinking of base polymers. Crosslinkers and accelerators can be added separately or pre-reacted with the polymer in order to individually adjust the resulting crosslinking properties. Depending on the dosage, different cross-linking densities and subsequent physical and mechanical properties can be achieved.

Bisphenol AF serves as a cross-linking agent and the benzyl triphenyl phosphonium chloride as an accelerator. The Sold as masterbatch ensures excellent dispersibility. The pre-reacted mixture offers advantages in handling, as an eutectic behavior occurs, i.e. the melting point of the mixture is lower than that of each individual component and the distribution in the FKM matrix is more uniform. Flourocure 5 is a complete cross-linking system for FKM with a balanced later value level and can be supplemented with small amounts of bisphenol AF as cross-linker and benzyl triphenyl phosphonium chloride as accelerators, depending on requirements.

Fluorocure 2

Chemical name: Benzyltriphenylphosphonium chloride (batched in FKM copolymer)
CAS Number: 1100-88-5, 9011-17-0

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Accelerator for bisphenol crosslinking of fluororubber • Masterbatch of benzyltriphenylphosphonium chloride in FKM copolymer • Active substance content 33 % • Use - in combination with Fluorocure 3 or - as an additive to Fluorocure 5 • Fluorocure 2 is usually dosed with 1-2 phr	Sold as: Light blue flakes Weight per container: 20 kg (PE lining with 5 kg each) Weight per pallet: 540 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Crosslinkers

Bisphenolic crosslinkers

Fluorocure 3

Chemical name: Bispenol AF (batched in FKM copolymer)
CAS Number: 1478-61-1, 9011-17-0

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Bisphenol crosslinkers for fluororubber • Masterbatch of bisphenol AF in FKM copolymer • Active substance content 50 % • Application - in combination with Fluorocure 2 or - as an additive to Fluorocure 5 • Fluorocure 3 is usually dosed with 1-2 phr	Sold as: White flakes Weight per container: 20 kg (PE lining with 5 kg each) Weight per pallet: 480 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Fluorocure 5

Chemical name: Combination of bispenol AF and benzyltriphenylphosphonium chloride in a ratio of 4:1
CAS Number: 1478-61-1, 1100-88-5

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Crosslinking system (accelerators and crosslinkers) for fluororubber • Ratio of crosslinkers to accelerators: Approx. 4:1 • Reduced mold contamination • Faster curing process (without increasing the risk of scorch) • Excellent dispersion during mixing due to low melting point (70-80 °C) • Use alone or in combination with Fluorocure 2 and 3 • Fluorocure 5 is usually dosed at 1-3 phr	Sold as: Yellowish granules Weight per container: 25 kg (PE lining; 5 kg each) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Crosslinkers

Bisphenolic crosslinkers

Fluorocure 5 gran

Chemical name: Combination of bispenol AF and benzyltriphenylphosphonium chloride in a ratio of 4:1
CAS Number: 1478-61-1, 1100-88-5

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Polymer-bound crosslinking system (accelerators and crosslinkers) for fluororubber • Crosslinkers/accelerators ratio: Approx. 4:1 with 50 % FKM • Reduced mold contamination • Faster curing process (without increasing the risk of scorch) • Excellent dispersion during the mixing process • Use alone or in combination with Fluorocure 2, 3 and/or 5 • Fluorocure 5 is normally dosed at up to 5 phr	Sold as: Black granules Weight per container: 25 kg (PE lining; 5 kg each) Weight per pallet: 500 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Cool and dry, no direct sunlight

Crosslinkers

Peroxides

Peroxides are polar compounds that are poorly distributable in the rubber matrix. Better peroxide distribution is achieved by using masterbatches. The selection of peroxides is often determined by processing/curing temperature or by the half-life of the peroxide used.

Norperox BIPB-40

Chemical name: Di(2-Tert.Butylperoxyisopropyl) benzene
CAS Number: 25155-25-3, 471-34-1, 7631-86-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Peroxide crosslinkers for various polymers • 40 % on chalk/silica • In combination with the coagents Norlink TAIC, TMPTMA • Norperox BIPB-40 is usually dosed at 2-3 phr	Sold as: White free-flowing powder Weight per container: 20 kg carton (2 x 10 kg bags) Weight per pallet: 1,080 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Max. 30 °C

Norperox BIPB-40 PG

Chemical name: Di(2-Tert.Butylperoxyisopropyl) benzene
CAS Number: 25155-25-3, 471-34-1, 7631-86-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Peroxide crosslinkers for saturated elastomers, e.g. EPDM • Pressed granulate • 40 % on chalk/silica • In combination with the coagents Norlink TAIC, TMPTMA • Norperox BIPB-40 PG is usually dosed at 2-3 phr	Sold as: White granules Weight per container: 20 kg cartin (2 x 10 kg bags) Weight per pallet: 1,080 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Max. 30 °C

Crosslinkers

Sulfur

Deosulf 95

Chemical name: Sulfur
CAS Number: 7704-34-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Cross-linking agent • Soluble sulfur with dispersing agent (white mineral oil), dust-free • Suitable for soft compounds based on natural and synthetic rubber • No agglomeration during storage, transport or mixing • No local overconcentration • Uniform physical properties • 1 phr Deosuf L95 is equal to 1 phr sulfur	Sold as: Yellow powder Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Deosulf U 60

Chemical name: Sulfur
CAS Number: 7704-34-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Cross-linking agent • Insoluble sulfur with organic dispersing agents • Good dispersibility without local overconcentration, better aging properties and reduced risk of efflorescence • Excellent storage stability, good ready-to-use tack, no efflorescence • Especially for soft compounds • Sulfur content: 57-61 % • 1.7 phr Deosulf U60 corresponds to 1 phr sulfur	Sold as: Yellow paste Weight per container: 20 kg bucket Weight per pallet: 480 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Crosslinkers

Sulfur

Norcure S 80 MG

Chemical name: Sulphur
CAS Number: 7704-34-9

Hazards identification:

Supplier: Nordmann, Rassmann GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Curing agent for all natural and synthetic rubbers • polymer-bound dosage forms enables rapid absorption & good dispersibility	Sold as: Yellowish granules Weight per container: 30 kg bag Weight per pallet: 540 kg Pallet type: Other	Shelf life: 18 months Special storage conditions: Cool and dry

Flame retardants

We have a broad portfolio of flame retardants - our colleagues will be happy to provide you with the best possible advice. The table below gives you an initial overview.

Nord-Min CP 70

Chemical name: 70 % chlorinated paraffin
CAS Number: 63449-39-8

Hazards identification: Not classified as hazardous

Supplier: Nordmann, Rassmann GmbH

NORDMANN

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Chlorinated paraffin as a flame retardant • Obtained using a new process in aqueous phase (solvent-free) • No solvent residues, no carbon tetrachloride • Chlorine content: min. 69 % • Softening point: max. 107 °C	Sold as: White to slightly yellowish powder, white to slightly yellowish granules (low melting point) Weight per container: 25 kg paper bags / 500 kg big bags Weight per pallet: 1,000 kg / 1,000 kg Pallet type: Other	Shelf life: 3 years Special storage conditions: Cool and dry

Flame retardants

	Appearance	Dosage form	FR system	Synergist	Applications	
					Elastomers	Plastics
Antimony compounds						
Nyacol series	Translucent, white or clear yellow	Powder, liquid	Gas phase active in halogenated systems	X	X	X
Batches						
NORD-MIN® FRMB series	White, grey, opale	Pellets	Halogenated & non-halogenated			X
Boron compounds						
Ammonium pentaborate	White	Powder	Smoke suppressor & gas promotor	X		X
Zinc borate	White	Powder	Smoke suppressor	X	X	X
Zinc borate anhydrous	White	Powder	Smoke suppressor	X		X
Cyaoguanidine						
NORD-MIN® DDA series	White	Powder	Gas promotor & char builder in intumescent systems	X		
Sacoflam 31107	White	Powder	Gas promotor & char builder in intumescent systems	X	X	X
Expandable graphites						
NORD-MIN® series	Dark grey	Powder	Intumescent		X	X
Halogens						
NORD-MIN® CP 70 chloroparaffin	White to slightly yellow	Powder	Gas phase		X	X
Metal hydroxides						
ATH & MDH	White	Powder	Water evaporation		X	X
Nitrogen compounds						
NORD-MIN® MC melamine cyanurate	White	Powder	Intumescent & gas phase		X	X
Pentaerythritol						
Pentaerythritol	White	Powder	Carbonizer in intumescent systems	X	X	X
Phosphorous compounds						
NORD-MIN® RDP	Colorless or light yellow	Liquid	Condensed phase / gas phase		X	X
P/N compounds						
NORD-MIN APP range	White	Powder	Intumescent & gas phase		X	X
NORD-MIN PNA range	White	Powder	Intumescent & gas phase		X	X
NORD-MIN PNP range	White	Powder	Intumescent & gas phase		X	X
RABITLE Phenoxyphosphazene	White to slightly yellow	Granules, powder	Gas phase			X

Plasticizers

Plasticizers are low-viscosity substances that are readily soluble in rubber. They increase the mobility of polymer chains, thus reducing viscosity and hardness in final compounds.

Antistatic plasticizer

Product name	Colour Hazen ASTM D 1209	Density g/cm³ (25 °C) ASTM D 1045	Refraction index (25 °C) ASTM D 1045	Acid number mg KOH/g ASTM D 974	Water content % ASTM E 203	Applications
Glyplast AS1 (poly(ehylenglycol 2-ethyhexanote)	90	1.11	1.45	max 3	max 1	Sole shoes, hose, sheets, rubber and PVC acticles
Glyplast AS3 (poly(ehtylenglycol) laurate)	90	1.11	1.45	max 3	max 1	Sole shoes, hose, sheets, rubber and PVC acticles
Glyplast AS809 (butyldiglycol adipate derivated)	2	1.02	1.45	max 3	max 0.1	Sole shoes, hose, sheets, rubber and PVC acticles

Glyplast AS

Chemical name: See above
CAS Number: Depending on type

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
Glyplast AS3: • Especially designed for PVC / NBR, non-black, antistatic and FDA applications • Like conveyor belts for food industry. **Glyplast AS809:** • Internal antistatic effect.	Sold as: Liquid Weight per container: Depending on type: drums, IBC, bulk Weight per pallet: Depending on type Pallet type: Other	Shelf life: 24 months Special storage conditions: No specific requirements

Plasticizers

Ester plasticizers

Polymeric Plasticizer

Product name	Ester content %	Density g/cm³ (25 °C) ASTM D 1045	Viscosity mPas.s (25 °C) ASTM D 445	Acid number mg KOH/g ASTM D 974	Water content % ASTM E 203	Applications
Glyplast 1070 C (polyadipate ester)	>99	1.11	15,000	max 2.5	max 0.1	films, labels, canvas, technical parts, conveyor belts, safety footwear, tubes for oil and greases
Glyplast 206/3 NL (polyadipate ester)	>99	1.08	900	max 1.5	max 0.1	Compounds, stretch films, tapes, adhesives, surface coatings, upholstery, technical parts, food contact approved
Glyplast 206/5 NL (polyadipate ester)	>99	1.10	2,200	max 1.5	max 0.1	Compounds, cling films, tapes, adhesives, surface coatings, upholstery, technical parts, waterproofing solutions, food contact approved
Glyplast 206/6 NL (polyadipate ester)	>99	1.10	2,700	max 1.5	max 0.1	Compounds, cling films, tapes, adhesives, surface coatings, upholstery, technical parts, waterproofing solutions, food contact approved
Glyplast 206/7 NL (polyadipate ester)	>99	1.11	4,000	max 1.5	max 0.1	Tapes, labels, conveyor belts, food contact films, wrap films, coatings, cables, technical parts, footwear, leather clothing, high extraction applications, food contact approved
Glyplast 206/8 NL (polyadipate ester)	>99	1.12	7,000	max 1.5	max 0.1	Tapes, labels, conveyor belts, food contact films, wrap films, coatings, cables, technical parts, footwear, leather clothing, high extraction applications, food contact approved
Glyplast 206/9 NL (polyadipate ester)	>99	1.10	10,000	max 1.5	max 0.1	Printing rollers, elastic films, tubes, hoses, elastic films, coatings, gaskets, technical articles, food contact approved
Glyplast 2106/7 (polyadipate ester)	>99	1.11	4,000	max 1.5	max 0.1	Compounds, films, tapes, adhesives, surface coatings, upholstery, technical parts
Glyplast 392 (polyphtalate ester)	>99	1.05	850	max 1.5	max 0.1	Tablecloths, curtains, films, pipes, tubing, technical articles, adhesive sheets
Glyplast 201/6 NL (polyadipate ester)	>99	1.11	2,750	max 1.5	max 0.1	Tablecloths, curtains, films, pipes, tubing, technical articles, adhesive sheets, food contact approved
Glyplast 201/8 NL (polyadipate ester)	>99	1.12	7,000	max 1.5	max 0.1	Tablecloths, curtains, films, pipes, tubing, technical articles, adhesive sheets, high extraction resistance, food contact approved

Plasticizers

Ester plasticizers

Polymeric Plasticizer

Glyplast

Chemical name: Depending on type
CAS Number: Depending on type

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
Glyplast 206/X NL Series: • Viscosity from 850 to 9000cP. High extraction and temperature resistance. FDA approved. **Glyplast 20K/X Series:** • Extra ageing and temperature resistance vs 206/X NL series. FDA approved. **Glyplast PAX Series:** • Biodegradable and Biobased version of Glyplast206/x NL and 20K/X Series. FDA approved.	Sold as: Liquid Weight per container: Depending on type: drums, IBC, bulk Weight per pallet: Depending on type Pallet type: Other	Shelf life: 24 months Special storage conditions: No specific requirements

Plasticizers

Ester plasticizers

Adipates

Product name	Colour Hazen	Ester content %	Density g/cm³ (25 °C) ASTM D 1045	Acid number mg KOH/g ASTM D 974	Water content % ASTM E 203	Applications
Glyplast DOA bis(2-ehtylhexyl adipate)	20	>99.9	0.92	max 0.1	max 0.1	Gaskets, footwear, technical articles, toys, surfaces, canvas, films, food contact approved
Glyplast DIDA di(isodecyl adipate)	20	>99.9	0.92	max 0.1	max 0.1	Artificial leather, dryblend, films, surface coatings, inks, technical articles toys, hoses, conveyor belts, sound absorbers
Glyplast 801 (ether-ester adiapte)	4 (Gardner)	>99.9	1.02	max 1	max 0.1	Highly polar rubber formulations and rubber technical articles, gasket for gearbox, oil and gasoline hoses
Glyplast 803 (ether-ester adipate)	6 (Gardner)	>99.9	1.04	max 0.5	max 0.1	Highly polar rubber formulations and rubber technical articles, gasket for gearbox, oil and gasoline hoses

Glyplast DOA

Chemical name: Bis(2-ethylhexyl) adipate
CAS Number: 103-23-1

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Medium molecular weight • Application: • Plasticiser in PVC • Synthetic rubber for high flexibility at very low temperatures • Recommendation in CR	Sold as: Clear & transparent liquid Weight per container: 185 kg drum/ 900kg IBC/ bulk Weight per pallet: 740 kg/ 900 kg/ --- Pallet type: Other	Shelf life: 24 months Special storage conditions: No specific requirements

Plasticizers

Ester plasticizers

Adipates

Glyplast 801

Chemical name: bis[2-(2-butoxyethoxy)ethyl] adipate
CAS Number: 141-17-3

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Medium viscosity • Polar rubbers & low temperatures • For applications where migration must be minimised • Recommended in ACM, AEM, ECO, NBR/PVC	Sold as: Dark yellow liquid Weight per container: 190 kg drum/ 1,000kg IBC/ bulk Weight per pallet: 760 kg/ 1,000 kg/ --- Pallet type: Other	Shelf life: 24 month Special storage conditions: No specific requirements

Glyplast 803

Chemical name: bis[2-[2-(2-butoxyethoxy)ethoxy]ethyl] adipate
CAS Number: 65520-46-9

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Medium viscosity • Polar rubbers & low temperatures • For applications where migration must be minimised • Recommended in ACM, AEM, ECO, NBR/PVC	Sold as: Dark yellow liquid Weight per container: 190 kg drum/ 1,000 kg IBC/ bulk Weight per pallet: 760 kg/ 1,000 kg/ --- Pallet type: Other	Shelf life: 24 month Special storage conditions: No specific requirements

Plasticizers

Ester plasticizers

Sebacates

Product name	Colour Hazen ASTM D 1209	Ester content % 	Density g/cm³ (25 °C) ASTM D 1045	Acid number mg KOH/g ASTM D 974	Water content % ASTM E 203	Applications
Glyplast DOS bis (2-ethylhexyl sebacate)	70	>99.9	0.91	max 0.2	max 0.1	Rubber and PVC technical articles, belts, tubes, gaskets. Very low temperature cables and hoses
Glyplast DIDS di(isodecyl sebacate)	80	>99.9	0.92	max 0.25	max 0.1	Dashboards, electrical wires, technical articles, gaskets, pipes

Plasticizers

Ester plasticizers

Trimellitates

Product name	Colour Hazen ASTM D 1209	Ester content %	Density g/cm³ (25 °C) ASTM D 1045	Acid number mg KOH/g ASTM D 974	Water content % ASTM E 203	Applications
Glyplast TMO (2-ethylhexyl trimellitate)	85	>99.9	0.98	max 0.2	max 0.1	Power cables (ISO 6722 Class B), dashboards, sheets, profiles, gaskets
Glyplast TML-810 (C8-C10 trimellitate)	125	>99.9	0.97	max 0.2	max 0.1	ISO 6722 Class C high temperature electrical cables, car dashboards, technical articles, gaskets, profiles
Glyplast TML-9 (C9 trimellitate)	100	>99.9	0.97	max 0.15	max 0.1	ISO 6722 Class C high temperature electrical cables, car dashboards, technical articles, gaskets, profiles
Glyplast TML-911 (linear-branched C9-C11 trimellitate)	100	>99.9	0.96	max 0.15	max 0.1	ISO 6722 Class C high temperature electrical cables, car dashboards, technical articles, gaskets, profiles

Glyplast TMx

Chemical name: See above
CAS Number: Depending on type

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
Glyplast TMO: • Good extraction and high temperature resistance **Glyplast TML-810:** • Extra high temperature resistance and biobased version of TMO **Glyplast TML-130:** • Improved version of the TML-911	Sold as: Liquid Weight per container: Depending on type: drums, IBC, bulk Weight per pallet: Depending on type Pallet type: Other	Shelf life: 24 month Special storage conditions: No specific requirements

Plasticizers

Ester plasticizers

Benzoates

Product name	Colour Hazen ASTM D 1209	Density g/cm³ (25 °C) ASTM D 1045	Acid number mg KOH/g ASTM D 974	Water content % ASTM E 203	Applications
Glyplast DEPG (diethylene/dipropylpenglycol benzoate)	50	1.16	max 1.5	max 0.1	Caulks, profiles, PVC flooring, roofing, films, anti-staining application
Glyplast TEPG (triethylene/ dipropylenglycol benzoate)	85	1.16	max 1.5	max 0.1	Caulks, profiles, PVC flooring, roofing, films, anti-staining application
Glyplast DPPG (dipropylenglycol benzoate)	80	1.12	max 1.15	max 0.1	Caulks, profiles, PVC flooring, roofing, films, anti-staining application

Glyplast

Chemical name: See above
CAS Number: Depending on type

Hazards identification: Not classified as hazardous

Supplier: Condensia Quimíca

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
Glyplast DEPG: • High performance plasticizer, excellent alternative to phthalates due to its low toxicity **Glyplast DPPG:** • DPG dibenzoate **Glyplast TEPG:** • High solvating plasticizer	Sold as: Liquid Weight per container: Depending on type: drums, IBC, bulk Weight per pallet: Depending on type Pallet type: Other	Shelf life: 24 month Special storage conditions: No specific requirements

Plasticizers

Mineral oil plasticizers

Process oils are mainly special mineral oils that help to improve processing capabilities when mixing rubber compounds (e. g. dispersion of fillers, control of viscosity) as well as the physical properties of finished compounds. Depending on the (crude) oil source and the manufacturing process used, they may become either naphthenic, paraffinic or aromatic oils.

Process oil are materials that soften another substance or make it flexible

- to aid processing
- to extend polymer
- to facilitate incorporation of fillers
- to Increase plasticity
- to improve extrusion properties
- to lower hardness
- to enhance pigment dispersion etc.

Plasticizers

Mineral oil plasticizers

Naphthenic oils

ISCC International Sustainability & Carbon Certification

HyPrene *Process Oils*

HyPrene Naphthenic Process Oils
Typical Property Values

TEST DESCRIPTION	TEST METHOD	40	60	100	L150	L500	L750	L1200	L2000	V175BS
Physical properties										
Viscosity, SUS at 100 °F (37.8 °C)	ASTM D2161	36	60	110	154	542	777	1248	2133	5547
Viscosity, SUS at 210 °F (98,9 °C)	ASTM D2162	30	34	39	41	56	64	78	101	214
Viscosity, cSt at 40 °C (104 °F)	ASTM D445	3	10	21	30	102	145	231	389	1010
Viscosity, cSt at 100 °C (212 °F)	ASTM D446	1	2	4	4	9	11	15	20	44
API Gravitiy, 60 °F (15.6 °C)	ASTM D1250	33	28	24	24	23	23	22	22	23
Specific Gravitiy, 60 °F (15.6 °C)	ASTM D4052	0.862	0.886	0.907	0.909	0.917	0.918	0.921	0.924	0.916
Viscosity - Gravity Constant	ASTM D2501	-	0.857	0.869	0.866	0.858	0.855	0.852	0.849	0.813
Density, lbs/gal at 60 °F	ASTM D1250	7.2	7.4	7.6	7.6	7.6	7.6	7.7	7.7	7.6
Density at 15.6 °C, g/cm³	ASTM D1250	0.861	0.885	0.907	0.908	0.916	0.854	0.920	0.923	0.915
Molecular weight	ASTM D2502	-	270	310	325	400	430	465	500	680
Flash point, COC, °F (°C)	ASTM D92	228 (109)	308 (153)	343 (173)	357 (181)	434 (223)	446 (230)	469 (243)	508 (263)	559 (293)
Flash point, PMCC, °F (°C)	ASTM D93	208 (98)	289 (143)	323 (162)	335 (168)	417 (214)	412 (212)	437 (225)	469 (243)	-
Color, ASTM	ASTM D6045	L0.5	L0.5	L0.5	L0.5	L1.0	L2.0	L2.0	L2.0	L2.5
Pour point, °F (°C)	ASTM D5949	-	-	-55 (-48)	-48 (-45)	-21 (-30)	-13 (-25)	-3 (-19)	4 (-16)	-
Pour point, °F (°C)	ASTM D5950	-126 (-88)	-68 (-56)	-	-	-	-	-	-	16 (-9)
Volatility, wt %, 225 °F (evap. loss)	ASTM D972	-	22.2	9.3	5.1	0.7	0.3	0.1	0.1	0.1
Glass transition temperature (Tg), °C	ASTM D3418	-73	-87	-76	-70	-63	-61	-58	-54	-58
Chemical properties										
Acid number, mg KOH/g	ASTM D664	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aniline point, °F (°C)	ASTM D611	153 (67)	169 (76)	168 (76)	173 (78)	191 (88)	196 (91)	203 (95)	210 (99)	249 (120)
Sulfur, ppm	ASTM D4294	-	-	184	291	371	572	686	833	-
Sulfur, ppm	ASTM D7212	2	28	-	-	-	-	-	-	705
Refractive index, 20 °C (68 °F)	ASTM D1218	1.4680	1.4835	1.4949	1.4968	1.5018	1.5038	1.5058	1.5079	1.503
UV absorptivity at 260 nm	ASTM D2008	0.14	0.66	1.37	2.09	2.78	3.94	4.76	5.43	3.21
Carbon type analysis, %	ASTM D2140									
Ca		2	6	9	11	11	12	12	13	7
Cn		57	48	49	45	41	37	35	33	28
Cp		41	46	42	44	48	51	53	54	65
Health and safety properties										
Polycyclic aromatic compounds, wt %	IP 346	<3	<3	<3	<3	<3	<3	<3	<3	<3
Modified Ames assay, MI	ASTM E1687	<1	<1	<1	<1	<1	<1	<1	<1	<1
FDA Regulation	21 CFR 178.3620	PASS (B)	PASS (C)	PASS (C)	-	-	-	-	-	-

Plasticizers

Mineral oil plasticizers

Naphthenic oils

Hygold *Base Oils*

HyGold Naphthenic Base Oils

Typical Property Values*

TEST DESCRIPTION	TEST METHOD	40	60	100	L150	L200	L300	L500	L600	L750	L1200	L2000
Physical properties												
Viscosity, SUS at 100 °F (37.8 °C)	ASTM D2161	38	60.1	118	154	211	311	526	626	774	1244	2139
Viscosity, SUS at 210 °F (98,9 °C)	ASTM D2161	30.4	34.3	39.0	41	44	48	56	58	64	77	100
Viscosity, cSt at 40 °C (104 °F)	ASTM D445	4	9.0	22.3	30	41	59	99	117	144	230	390
Viscosity, cSt at 100 °C (212 °F)	ASTM D445	1.3	2.4	3.8	4	5	7	9	9	11	14	19.7
API Gravitiy, 60 °F (15.6 °C)	ASTM D1250	31.4	28.1	24.6	24	24	23	23	23	23	22	21.6
Specific Gravitiy, 60 °F (15.6 °C)	ASTM D4052	0.8686	0.8865	0.9066	0.909	0.911	0.913	0.917	0.916	0.919	0.922	0.9244
Viscosity - Gravity Constant	ASTM D2501	-	0.857	0.867	0.866	0.864	0.861	0.858	0.856	0.856	0.853	0.849
Density, lbs/gal at 60 °F	ASTM D1250	7.2342	7.383	7.550	7.6	7.6	7.6	7.6	7.6	7.7	7.7	7.7
Density at 15.6 °C, g/cm³	ASTM D1250	0.8678	0.8857	0.9057	0.908	0.911	0.911	0.916	0.915	0.918	0.921	0.924
Molecular weight	ASTM D2502	-	272	305	325	338	364	392	394	418	456	500
Flash point, COC, °F (°C)	ASTM D92	243 (117)	308 (153)	345 (174)	357 (181)	367 (186)	388 (198)	431 (222)	437 (225)	443 (228)	466 (241)	508 (264)
Flash point, PMCC, °F (°C)	ASTM D93	225 (107)	286 (141)	318 (159)	335 (168)	346 (174)	362 (183)	390 (199)	402 (206)	418 (215)	432 (222)	457 (236)
Color, ASTM	ASTM D6045	-	L0.5	L0.5	L0.5	L1.0	L1.0	L1.0	L0.5	L2.0	L2.0	L2.0
Pour point, °F (°C)	ASTM D5949	-	-	-56 (-49)	-	-40 (-40)	-33 (-36)	-29 (-34)	-22 (-30)	-21 (-29)	-17 (-27)	-8 (-22)
Pour point, °F (°C)	ASTM D5950	-118 (-83)	-83 (-64)	-	-48 (-45)	-	-	-	-	-	-	-
Chemical properties												
Acid number, mg KOH/g	ASTM D664	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Aniline point, °F (°C)	ASTM D611	151 (66)	169 (76)	170 (77)	173 (78)	178 (81)	183 (84)	190 (88)	195 (91)	196 (91)	202 (94)	209 (98)
Sulfur, ppm	ASTM D4294	-	-	293	291	240	421	373	270	612	792	795
Sulfur, ppm	ASTM D7212	6	44	-	-	-	-	-	-	-	-	-
Health and safety properties												
Polycyclic aromatic compounds, wt %	IP 346	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Modified Ames assay, MI	ASTM E1687	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
FDA Regulation	21 CFR 178.3620 (C)	-	PASS	PASS	-	-	-	-	-	-		

Plasticizers

Mineral oil plasticizers

Process oils

EcoPrene *Partly bio-based process oils*

Prototype EcoPrene Process Oils

Typical Property Values*

TEST DESCRIPTION	TEST METHOD	EcoPrene 102	EcoPrene 105	EcoPrene 500	EcoPrene 800	EcoPrene 1200	EcoPrene 2000
Physical properties							
Viscosity, SUS at 100 °F (37.8 °C)	ASTM D2161	118	126	527	828	1259	1941
Viscosity, SUS at 210 °F (98,9 °C)	ASTM D2161	40.9	44.1	67.6	75.8	85.9	133.0
Viscosity, cSt at 40 °C (104 °F)	ASTM D445	22.7	24.7	101	157	234	364
Viscosity, cSt at 100 °C (212 °F)	ASTM D445	4.4	5.4	12.0	14.0	16.4	27.0
API Gravitiy, 60 °F (15.6 °C)	ASTM D1250	24.1	23.2	21.7	21.7	21.7	23.2
Specific Gravitiy, 60 °F (15.6 °C)	ASTM D4052	0.9094	0.9146	0.9241	0.9236	0.9236	0.9146
Viscosity - Gravity Constant	ASTM D2501	0.871	0.876	0.869	0.862	0.856	0.836
Density, lbs/gal at 60 °F	ASTM D1250	7.578	7.617	7.697	7.692	7.697	7.617
Density at 15.6 °C, g/cm³	ASTM D1250	0.9086	0.9130	0.9232	0.9227	0.9228	0.9137
Molecular weight	ASTM D2502	339	380	476	483	494	653
Flash point, COC, °F (°C)	ASTM D92	372 (189)	397 (203)	540 (282)	552 (289)	530 (277)	587 (308)
Flash point, PMCC, °F (°C)	ASTM D93	320 (160)	333 (167)	478 (248)	480 (249)	459 (237)	504 (262)
Color, ASTM	ASTM D6045	L0.5	L0.5	1.5	L2.0	L2.0	2.4
Pour point, °F (°C)	ASTM D5949	-67 (-55)	-54 (-48)	0 (-18)	-11 (-24)	5 (-15)	21 (-6)
Water Content	ASTM D7546M	PASS	PASS	PASS	PASS	PASS	PASS
Appearance	ASTM D4176M	PASS	PASS	PASS	PASS	PASS	PASS
Glass transition temperature (Tg), °C	ASTM D3418	-59.1	-50.6	-67	-67.3	-61.3	-63.3
Chemical properties							
Acid number, mg KOH/g	ASTM D664	0.01	0.02	0.01	0.01	0.01	0.01
Sulfur, ppm	ASTM D4294	313	395	734	567	588	496
Refractive index, 20 °C (68 °F)	ASTM D1218	1.4899	1.4841	1.4964	1.5000	1.5036	1.4959
UV absorptivity at 260 nm	ASTM D2008	0.77	0.61	2.88	4.02	3.35	2.32
Health and safety properties							
Polycyclic aromatic compounds, wt %	IP 346	<3	<3	<3	<3	<3	<3
Modified Ames assay, MI	ASTM E1687	<1	<1	<1	<1	<1	<1

*Typical Property Values presented for general reference only.

Plasticizers

Plasticizers

Sustainable oils

RBD *Vegetable Oils*

RBD Vegetable Oils
Typical Property Values*

TEST METHODS	PROPERTY	RBD SOYBEAN	RBD RAPESEED	RBD CANOLA	HIGH OLEIC SUNFLOWER
Cd 1c-85	Iodine Value	124-139	105-126	106-120	80-90
Ca 2e-84	Karl Fischer Moisture	0.05 % Max	0.05 % Max	0.05 % Max	0.05 % Max
Ca 5a-40	Free Fatty Acids	0.1 % Max	0.1 % Max	0.05 % Max	0.1 % Max
Ce 1a-13	Fatty Acid Profile				
	C14:0 Myristic	ND-0.2 %	ND-0.2 %	ND	ND-0.1 %
	C16:0 Palmitic	8.0-14.5 %	2.5-7.0 %	4.10 %	2.6-5.0 %
	C16:1 Palmitoleic	ND-0.2 %	ND-0.6 %	ND	ND-0.2 %
	C18:0 Stearic	2.0-5.6 %	0.8-3.0 %	1.80 %	2.0-6.2 %
	C18-1 Oleic	17.0-32.0 %	51.0-70.0 %	63.50 %	78.0-90.7 %
	C18:2 Linoleic	46.0-59.0 %	15.0-30.0 %	19.00 %	2.1-17.0 %
	C18:3 Linolenic	4.5-11.0 %	5.0-14.0 %	8.00	ND-0.3 %
	C20:0 Arachidic	0.1-0.6 %	0.2-1.2 %	ND	0.2-0.5 %
	C20:1 Gadoleic	ND-0.5 %	0.1-4.3 %	ND	0.1-0.5 %
	C22:0 Behenic	ND-0.7 %	ND-0.6 %	ND	0.3-1.6 %
	C222:1 Erucic	ND-0.3 %	ND-2.0 %	ND	ND-0.3 %
	C24:0 Lignoceric	ND-0.5 %	ND-0.3 %		ND-0.5 %
ASTM D4052	Specific Gravity	0.919-0.925	0.914-0.920	0.920	0.916
ASTM D2161	Viscosity SUS @ 100 °F	157	181	177	201
ASTM D445	Viscositiy cST @ 40 °C	31.28	35.95	34.96	39.85
ASTM D445	Viscositiy cST @ 100 °C	7.56	8.14	8.05	8.54
ASTM D92	Flash Point °C, COC	326	335	320	340
ASTM D5949	Pour Point °C	-9	-22	-24	-22
ASTM D664	Acid Number mg KOH/g	0.14	0.12	>0.1	0.14
ASTM D1218	Refractive Indes, 20 °C	1.466-1.470	1.465-1.467	1.473	1.468
ASTM D2270	Viscositiy Index	224	211	215	200
ASTM D1500	Color	0.5	0.5	0.5	0.5

*Typical Property Values presented for general reference only.

Plasticizers

Plasticizers

Sustainable oils

Aurora *Bio-based Process oils*

Typical Property Values

TEST DESCRIPTION	TEST METHOD	Aurora RB P	Aurora RB W	Aurora RB Z1	Aurora RB Z	Aurora RB Z2
Biobased Content, %	OLEOA700	100	100	100	100	100
Viscosity, cSt at 40 °C (104 °F)	ASTM D445	158	554	799	1324	1513
Viscosity, cSt at 100 °C (212 °F)	ASTM D445	21	51	72	97	106
Viscosity-Gravity Constant	ASTM D2501 (to be calculated)	0.905	0.925	0.919	0.936	0.94
Density at 15.6 °C, g/cm³	ASTM D1250 D4052	0.9533	0.9755	0.9742	0.9877	0.9905
Viscosity Index	ASTM D2270 (to be calculated)	158	151	164	158	158
Flash point, COC, °C	ASTM D92	261	262	249	230	244
Flash point, PMCC, °C	ASTM D93	152.0	166.5	176.0	174.0	166.0
Pour point, °C	ASTM D5950	-18	-15	-15	-12	-12
NOACK Evaporation loss, %w	ASTM D5800	2.3	2.8	2.5	3.7	4.0
Water Content, ppmw	ASTM D7546	1117	783	407	2080	697
Acid Number, mg KOH/g	ASTM D664	5.2	10.2	14.2	14.6	16.4
Gardner Color	ASTM D6166	7.3	9.4	15.7	10.6	9.2
Refractive index, 20 °C (68 °F)	ASTM D1218	14.767	14.786	14.803	14.800	14.800
Sulfur, ppmw	ASTM D7212 D2622	<5	<5	9,1	<5	<5
Glass Transition (DSC)	AA-3.2.1.3	-80.2	-74.4	-73.5	-69.3	-69.4
Molecular Weight (GPC)	Mn	1784	1908	1988	1969	1963
	Mw	1843	1977	2060	2046	2042
	D	1.033	1.036	1.036	1.039	1.040
Iodine number	ISO 3961	82	67	66	67	57

*Typical Property Values presented for general reference only.

Plasticizers

Mineral oil plasticizers

Naphthenic oils

ISCC International Sustainability & Carbon Certification

In General

Chemical name: Synthetic and bio-based base and process oils, partly on mineral oil base, highly refined
CAS Number: Various

Hazards identification: Not classified as hazardous

Supplier: ERGON International Inc. **ERGON**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Napthenic base and process oils • Vegetable oils • Product range with partly and 100% bio-based components to achieve sustainability targets • Partly increasing solvency and functionality in rubber process oil • Improved processability and lower volatility	Sold as: Liquid Weight per container: 206 l drum / 900 l IBC / bulk Weight per pallet: --- Pallet type: Other	Shelf life: 3 years Special storage conditions: Store in a cool and well-ventilated place

Plasticizers

Mineral oil plasticizers

Paraffinic oils

GTL and mineral oil-based

Shell Catenex T Series

	ASTM	ISO / DIN	Catenex T 121	Catenex T 129	Catenex T 139	Catenex T 145	Catenex T 145 S	Catenex T 144	Catenex S 579 (H)
CAS No.			64742-54-7						64742-62-7
Color (Saybolt)	D 156		+30	+30	+28	+28	+29	+30	5.5 (ASTM)
Density @15 °C kg/m³	D 4052	ISO 12185	844	865	869	869	873	865	905
Refractive index @20 °C	D 1218		1.464	1.473	1.476	1.476	1.478	1.475	1.498
Viscosity index	D 2270	ISO 2909	116	103	103	103	101	106	
Flashpoint (COC) °C	D 92	ISO 2592	220	226	244	244	274	268	300
Pour point °C	D 97	ISO 3016	-18	-15	-15	-15	-15	-15	-6
Kinematic viscosity:									
@ 20 °C mm2/s	D 445	ISO 3104	49	116	222.6	362.7	362.7	313	2300
@ 40 °C mm2/s	D 445	ISO 3104	21	41	71.3	108.1	108.1	98	500
@ 100 °C mm2/s	D 445	ISO 3104	4.3	6.3	9.3	12.1	12.1	11.6	32
Sulfur (X-ray) wt %	D 2622	ISO 14596	<0.0005	<0.0005	<0.001	0.002	-	0.0005	1.3
Sulfur mg/kg (ppm)	D 2622	ISO 14596	<10	<10	<10	<20	<10	<10	-
Aniline point °C	D 611	ISO 2977	108	114	-	127	127	127	122
Carbon type distribution:									
C/A (S-corr.) %	D 2140 m.	DIN 51378	0	0	0	0	0	0	6
C/N (S-corr.) %	D 2140 m.	DIN 51378	28	32	34	31	31	28	23
C/P (S-corr.) %	D 2140 m.	DIN 51378	72	68	66	69	69	72	71
Votality:									
Noack (1 hour) @250 °C wt %	D 5800	DIN 51581	25	11	-	1	1	1	-
Purity requirements:									
Technical white oil	FDA 178.3620 (c)		Pass	Pass	Pass	Pass	Pass	Pass	-
Technical white oil	FDA 178.3620 (b)		Pass	Pass	Pass	Pass	Pass	Pass	-
Medicinal white oil	FDA 178.3620 (a)		-	-	-	-	-	-	-
EU/US Pharm			-	-	-	-	-	-	-
Cosmetic Regulation	EU 1223/2009		-	-	-	-	-	-	-
PAHs	EU 1272/2013		-	-	-	-	-	-	-
Plastic Directive	EU 10/2011		-	-	-	-	-	-	-
NSF http://info.nsf.org/usda/Listings.asp			-	-	-	-	-	-	-

Plasticizers

Mineral oil plasticizers

Paraffinic oils

GTL and mineral oil-based

Shell Catenex X

	ASTM	ISO / DIN	Catenex X 446
CAS No.			
Color (Saybolt)	D 156		4 (ASTM)
Density @15 °C kg/m³	D 4052	ISO 12185	865
Refractive index @20 °C	D 1218		1.479
Viscosity index	D 2270	ISO 2909	-
Flashpoint (COC) °C	D 92	ISO 2592	296
Pour point °C	D 97	ISO 3016	-12
Kinematic viscosity:			
@ 20 °C mm2/s	D 445	ISO 3104	374
@ 40 °C mm2/s	D 445	ISO 3104	118
@ 100 °C mm2/s	D 445	ISO 3104	13.9
Sulfur (X-ray) wt %	D 2622	ISO 14596	0.8
Sulfur mg/kg (ppm)	D 2622	ISO 14596	-
Aniline point °C	D 611	ISO 2977	-
Carbon type distribution:			
C/A (S-corr.) %	D 2140 m.	DIN 51378	3
C/N (S-corr.) %	D 2140 m.	DIN 51378	16
C/P (S-corr.) %	D 2140 m.	DIN 51378	81
Votality:			
Noack (1 hour) @250 °C wt %	D 5800	DIN 51581	1.1
Purity requirements:			
Technical white oil	FDA 178.3620 (c)		-
Technical white oil	FDA 178.3620 (b)		-
Medicinal white oil	FDA 178.3620 (a)		-
EU/US Pharm			-
Cosmetic Regulation	EU 1223/2009		-
PAHs	EU 1272/2013		-
Plastic Directive	EU 10/2011		-
NSF http://info.nsf.org/usda/Listings.asp			-

Plasticizers

Mineral oil plasticizers

Paraffinic oils

GTL and mineral oil-based

Shell Risella X

Technical white oils based on GTL (Gas-to-liquids), containing a high proportion of paraffinic hydrocarbons. Very high level of purity gives them properties that are crucial for many applications.

Shell GTL oils are e. g. colorless/virtually odorless; contain virtually no sulfur, nitrogen or aromatics; have low volatility and provide excellent UV and thermal color stability. They also consume less peroxide in e.g. corresponding EPDM-cured compounds.

	ASTM	ISO / DIN	Risella X 409	Risella X 411	Risella X 415	Risella X 420	Risella X 421	Risella X 430
CAS No.			**64742-54-7**	**1437280-85-7**	**848301-69-9**			
Color (Saybolt)	D 156		+30	+25	+30	+30	+30	+30
Density @15 °C kg/m³	D 4052	ISO 12185	785	800	806	816	820	828
Refractive index @20 °C	D 1218		1.438	1.445	1.450	1.454	1.456	1.460
Viscosity index	D 2270	ISO 2909	-	133	118	130	136	140
Flashpoint (COC) °C	D 92	ISO 2592	136	168	200	230	225	265
Pour point °C	D 97	ISO 3016	-15	-15	-39	-36	-30	-24
Kinematic viscosity:								
@ 20 °C mm2/s	D 445	ISO 3104	5.3	10.5	18	40	-	111
@ 40 °C mm2/s	D 445	ISO 3104	3.3	6.0	9.3	18	22.9	43
@ 100 °C mm2/s	D 445	ISO 3104	1.3	2.0	2.6	4.1	4.8	7.6
Sulfur (X-ray) wt %	D 2622	ISO 14596	-	-	-	-	-	-
Sulfur mg/kg (ppm)	D 2622	ISO 14596	<5	<5	<5	<5	<5	<5
Aniline point °C	D 611	ISO 2977	97	107	114	120	-	<130
Carbon type distribution:								
C/A (S-corr.) %	D 2140 m.	DIN 51378	-	-	-	-	-	-
C/N (S-corr.) %	D 2140 m.	DIN 51378	-	-	-	-	-	-
C/P (S-corr.) %	D 2140 m.	DIN 51378	-	-	-	-	-	-
Votality:								
Noack (1 hour) @250 °C wt %	D 5800	DIN 51581	-	74	40	12	10	2.0
Purity requirements:								
Technical white oil	FDA 178.3620 (c)		Pass	Pass	Pass	Pass	Pass	Pass
Technical white oil	FDA 178.3620 (b)		Pass	Pass	Pass	Pass	Pass	Pass
Medicinal white oil	FDA 178.3620 (a)		-	-	-	-	-	-
EU/US Pharm			-	-	-	-	-	-
Cosmetic Regulation	EU 1223/2009		-	-	-	-	-	-
PAHs	EU 1272/2013		-	-	-	-	-	-
Plastic Directive	EU 10/2011		-	-	-	-	-	-
NSF http://info.nsf.org/usda/Listings.asp			-	-	H1, HX-1, HT1		-	H1, HX-1, HT1

Plasticizers

Mineral oil plasticizers

Paraffinic oils

GTL and mineral oil-based

Shell Ondina X and Ondina

Medical white oils based on GTL (Gas-to-liquids). Use for drinking water and food applications.

	ASTM	ISO / DIN	Ondina X 415	Ondina X 420	Ondina X 432	Ondina 941
CAS No.			**1262661-88-0**		**8042-47-5**	
Color (Saybolt)	D 156		+30	+30	+30	+30
Density @15 °C kg/m³	D 4052	ISO 12185	806	816	844	871
Refractive index @20 °C	D 1218		1.45	1.454	1.467	1.477
Viscosity index	D 2270	ISO 2909	118	130	130	130
Flashpoint (COC) °C	D 92	ISO 2592	200	225	270	275
Pour point °C	D 97	ISO 3016	-39	-36	-24	-18
Kinematic viscosity:						
@ 20 °C mm2/s	D 445	ISO 3104	19	40	165	360
@ 40 °C mm2/s	D 445	ISO 3104	9.8	18	59	109
@ 100 °C mm2/s	D 445	ISO 3104	2.7	4.1	9.0	12.3
Sulfur (X-ray) wt %	D 2622	ISO 14596	-	-	<0.001	<0.001
Sulfur mg/kg (ppm)	D 2622	ISO 14596	<5	<5	<10	<10
Aniline point °C	D 611	ISO 2977	-	-	<130	126
Carbon type distribution:						
C/A (S-corr.) %	D 2140 m.	DIN 51378	0	0	0	0
C/N (S-corr.) %	D 2140 m.	DIN 51378	30	30	23	30
C/P (S-corr.) %	D 2140 m.	DIN 51378	70	70	77	70
Votality:						
Noack (1 hour) @250 °C wt %	D 5800	DIN 51581	40	12	1.6	1.6
Purity requirements:						
Technical white oil	FDA 178.3620 (c)		Pass	Pass	Pass	Pass
Technical white oil	FDA 178.3620 (b)		Pass	Pass	Pass	Pass
Medicinal white oil	FDA 178.3620 (a)		Pass	Pass	Pass	Pass
EU/US Pharm			comply	comply	Pass	Pass
Cosmetic Regulation	EU 1223/2009		fullfil	fullfil	fullfil	fullfil
PAHs	EU 1272/2013		fullfil	fullfil	fullfil	fullfil
Plastic Directive	EU 10/2011		-	-	Pass	Pass
NSF http://info.nsf.org/usda/Listings.asp			H1, HX-1, 3H			

Plasticizers

Mineral oil plasticizers

Paraffinic oils

GTL and mineral oil-based

In General

Chemical name: Paraffinic white oil
CAS Number: 8042-47-5

Hazards identification: Depending on the product

Supplier: Shell

SHELL

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Paraffinic mineral and GTL (Gas to liquids) based oils • Technical and medical white oils • Used in applications such as TPE/EPDM • Mainly highly saturated types free of aromatics or polar compounds • Consume less peroxide in e. g. corresponding EPDM-cured compounds	Sold as: Liquid Weight per container: 209 l drum / bulk Weight per pallet: 836 l / -- Pallet type: Other	Shelf life: 4 years from date of production / 2 years after delivery (unopened) Special storage conditions: Store in a cool and well-ventilated place

Plasticizers

Plasticizers used for both high- and low-temperature applications in rubber.

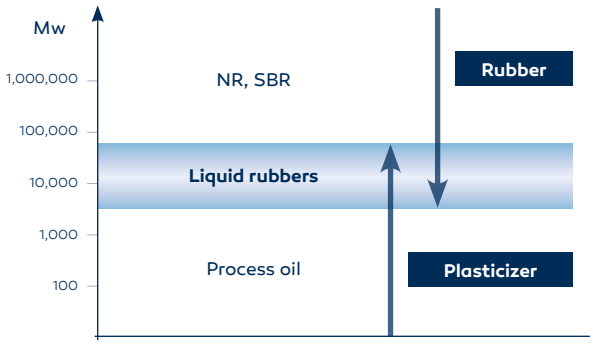
Liquid rubber

KURARAY LIQUID RUBBER includes liquid isoprene rubber (LIR) and liquid butadiene rubber (LBR). These high-viscosity synthetic rubbers are based on isoprene, butadiene and styrene. They are colorless, transparent and almost entirely odorless with low VOCs. The different grades of KURARAY LIQUID RUBBER serve as reactive plasticizers but have far higher molecular weight than normal plasticizers. They are co-vulcanizable and reduce migration significantly to improve the shelf life of end products. Using KURARAY LIQUID RUBBER during the rubber compounding phase significantly reduces processing time while maintaining the physical properties of the rubber compounds. This results in products that carry lower processing costs. The functionalized grades can be bonded to a wide variety of matrices for improved performance.

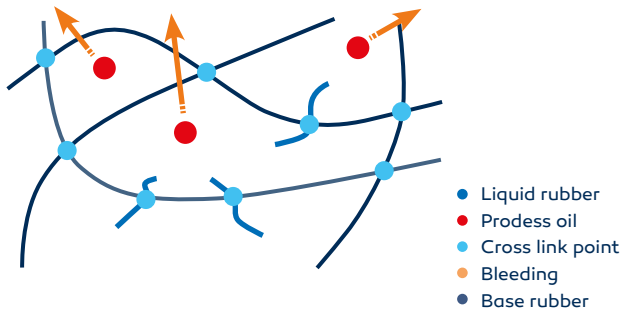
Common applications include tires, belts, hoses and other rubber goods. In addition, KURARAY LIQUID RUBBER is used to produce high-performance coatings, adhesives and sealants.

Kuraray developed a new type of liquid rubber material (LIR, LBR, L-SBR), called liquid farnesene rubber (LFR), to expand the range. The product is based on natural and sustainable raw materials, containing a polymerized form of β-farnesene (a renewable monomer). Through established fermentation processes, proprietary strains of yeast convert sugar sources (e.g. sugarcane), into β-farnesene.

Liquid rubber between rubber and plasticizers



Mechanism of conventional vs. reactive plasticizer



LIR = liquid isoprene rubber

Chemical name: See Table
CAS Number: Depending on type

Hazards identification: Not classified as hazardous

Supplier: Kuraray Europe GmbH

KURARAY EUROPE GMBH

Sold as / Weight:	Shelf life / Special storage conditions:
Sold as: Colorless viscous liquid; 2 kg pouches (low-melting bags, 8 pieces per box); 15 kg canister; 165 kg drum; 800 kg IBC Pallet weight: 768 kg per pallet Pallet type: Other	Shelf life: 6 months Special storage conditions: Cool and dry, protect from heat sources (flammable)

Plasticizers

Liquid rubber

Category	Type	Grade Name	Number of functional groups per molecule	Molecular Weight	Viscosity	Glass Transition Temp. [°C]	Features
L-IR (Isoprene)	Homopolymer	L-IR-30	-	28,000	70	-63	• Reactive plasticizer (NR, IR, SBR, BR, IIR etc.) • Tire, conveyor belt, rubber goods • Pressure sensitive adhesives/hot melts • Automotive sealants, coatings and adhesives • Plasticizer for printing plates • Binder for brake pads, grinding wheels, etc.
		L-IR-50	-	54,000	500	-63	
	Block-Copolymer	L-IR-390	-	48,000	400	-95	• Hot melt adhesives/PSA (SIS, SBS, EVA) • Automotive sealants, coatings and adhesives
	Carboxylated	L-IR-403	3	34,000	200	-60	• Improves adhesion to metals and fibers • Automotive sealants, coatings and adhesives • Hot melt adhesives/PSA (SIS, SBS, EVA) • Binder for brake pads, grinding wheels, etc.
		L-IR-410	10	30,000	430	-59	
	UV Curable	UC-102M	2	17,000	30	-60	• Crosslinkable using UV
		UC-203M	3	35,000	190	-60	
L-BR (Butadiene)	Homopolymer	L-BR-302	-	5,500	0.6	-85	• Reactive plasticizer (NR, IR, SBR, BR etc.) • Tire, printing plate • Coagent for EPDM (peroxide curing) • Automotive sealants, coatings and adhesives • Hot melt/PSA • Vinyl content: 5-70% • Thermoset PU modification
		L-BR-307	-	8,000	1.5	-95	
		L-BR-305	-	26,000	40	-95	
		L-BR-352	-	9,000	6	-60	
		L-BR-361	-	5,500	5.5	-49	
	GS-L-BR (Graft silane)	GS-L-BR -114*	2	6,000	6	-50	• Tires, truck and bus tires and rubber goods • Improve silica-polymer interaction • Improve silica dispersion
L-SBR (Styrene/ Butadiene)	Random Copolymer	L-SBR-870*	-	6,000	250	-18	• Good compatibility with S-SBR and E-SBR • Tires, ultra-high-performance (UHP) tires and rubber goods • Automotive sealants, coatings and adhesives • Partially hydrogenated grades are available • Damping • Flexo printing plates
		L-SBR-822*	-	8,800	8.3	-60	
		L-SBR-841N*	-	10,000	100 (at 60°C)	-6	
L-FR (Farnesene)	Homopolymer	L-FR-107L	-	130,000	70	-70	• Tire, rubber goods, adhesives and sealants • Bio-based • Significant GHG reduction
	Random Copolymer	L-FBR-742	-	30,000	15	-78	
		L-FBR-746	-	100,000	520	-78	

*development grades

Processing aids

Processing aids sometimes play a decisive role in the rubber industry. Adjusting flow properties, distributing fillers better, improving processing characteristics and the properties of end products (e.g. by increasing tackiness, helping with demolding, increasing dimensional stability/green strength, etc.) are just some of the benefits that can be achieved with the help of processing aids.

Factice

In rubber processing, factice is used as a special process additive to improve dimensional stability or haptics, among other things. The use of different base oils (e.g. rapeseed oil or castor oil), as well as different types of cross-linking lead to highly specific products with a wide range of applications.

Chlorosulfur factice

Faktis Hansa O

Chemical name: Chlorosulfur factice
CAS Number: -

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Refined rapeseed oil, cross-linked with chlorosulfur and inorganic stabilizers • No mineral oil • Universally applicable • For white and light-colored materials based on all-purpose rubbers • Especially good for producing molded articles • High green strength and low influence on compression set • BfR-approved • Free sulfur: Max. 0.1 % • Faktis Hansa O can be dosed between 10 and 30 phr	Sold as: White to light-colored ground material Weight per container: 20 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Chlorosulfur factice

Faktis NC 12

Chemical name: Chlorosulfur factice
CAS Number: -

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Rapeseed oil and special oils cross-linked with chlorosulfur • For CR, if swelling resistance is not in the foreground (no castor oil factice in use) • Especially for fabric coatings made of CR • Improves the ozone resistance of CR • Low influence on compression set • BfR-approved • Free sulfur: Max. 0.1 % • Faktis NC 12 can be dosed at between 10 and 30 phr	Sold as: White to light-colored ground material Weight per container: 20 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis Nr. 12

Chemical name: Chlorosulfur factice
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Refined rapeseed oil, cross-linked with sulphur chloride, with inorganic stabilizers • Mainly for erasers. In the case of cold cure e.g. for bathing caps • May be used as retarder for sulphur vulcanization in small quantities • Free sulfur: max. 0.1 % Faktis Nr. 12 can be dosed at between 10 and 30 PHR	Sold as: White ground material Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Chlorosulfur factice

Faktis Nr. 17 GW

Chemical name: Chlorosulfurized rapeseed oil
CAS Number: 68153-36-6

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Rapeseed oil cross-linked with chlorosulfur and inorganic stabilizers • No mineral oil • Mainly for erasers and cold-curing items, e.g. bathing caps • Improves the absorption of plasticizers • Improves dimensional stability • BfR-approved • Free sulfur: Max. 0.1 % • Faktis Nr. 17 GW can be dosed at between 10 and 30 phr	Sold as: White ground material Weight per container: 25 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Peroxide factice

Faktis WP

Chemical name: Castor oil modified with maleic anhydride
CAS Number: 68308-83-8

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Radically cross-linked, modified castor oil - free of sulfur and chlorine (no halogens). • For articles based on standard and special rubbers with special heat resistance requirements • For all cross-linking systems (especially peroxide cross-linking) • No influence on CS (even with higher dosages) • Can be used in transparent compounds • Improves the absorption of plasticizers, dimensional stability • Good UV and heat resistance • Free sulfur: 0.0 % • Faktis WP can be dosed at between 10 and 30 phr	Sold as: White regrind Weight per container: 25 kg bag Weight per pallet: 825 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis WPF-NT

Chemical name: Castor oil modified with maleic anhydride
CAS Number: 68308-83-8

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Radically cross-linked, modified castor oil • Free of sulfur and chlorine (no halogens) • Well-miscible with all elastomers • Suitable for light and transparent compounds, as well as all cross-linking systems • Excellent heat and UV resistance • Improves plasticizer absorption and dimensional stability • Continuous manufacturing process (new) • Free sulfur: 0.0 % • Faktis WPF-NT can be dosed at between 5 and 15 phr	Sold as: Fine, white ground material Weight per container: 25 kg bag Weight per pallet: 825 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis F 10

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil • Free of mineral oil • For colored and black compounds that are based on general purpose rubber • Especially good for producing molded articles • Less influence on CR • Improves the absorption of plasticizers • High dimensional stability and reduces shrinkage • FDA/BfR-approved • Sulfur content: 13 %. • Free sulfur: Max. 0.2 %. • Faktis F 10 can be dosed at between 10 and 30 phr	Sold as: Brown regrind Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 18 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis F 14

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil • Free of mineral oil • For colored and black compounds that are based on general purpose rubbers • Especially good for producing molded articles, extrudates, printing blankets and/or rollers • Wide range of application • Improves the absorption of plasticizers • Improves dimensional stability and reduces shrinkage • FDA/BfR-approved • Sulfur content: 16 % • Free sulfur: 0.4-0.9 % • Faktis F 14 can be dosed at between 10 and 30 phr	Form of delivery: Brown ground material Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 18 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis NP 17

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil and special oils • Free of mineral oil • For CR when swelling resistance is not a priority (no castor oil factice in use) • Improves ozone resistance of CR • Improves the absorption of plasticizers • Improves dimensional stability • Reduces roller stickiness • Sulfur content: 15 % • Free sulfur: 0.35 %. • Faktis NP 17 can be dosed between 10 and 30 phr	Sold as: Dark brown ground material Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 12 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis DS weich

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil with 30 % mineral oil • For colored and black compounds that are based on general purpose rubbers • Suitable for soft compounds, e.g. foam rubber (as the hardness is often significantly reduced) • Improves the absorption of plasticizers • Improves dimensional stability • FDA-approved • Sulfur content: 11 %. • Free sulfur: 0.45 %. • Faktis DS weich can be dosed at between 10 and 30 phr	Sold as: Brown regrind Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 12 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis F 10 weich

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil • Free of mineral oil • For colored and black compounds that are based on general purpose rubber • Suitable for soft compounds, e.g. sponge rubber • Improves the absorption of plasticizers • High dimensional stability, reduces shrinkage • FDA/BfR-approved • Sulfur content: 10 % • Free sulfur: max. 0.2 % • Faktis F 10 weich can be dosed at between 10 and 30 phr	Sold as: Brown regrind Weight per container: 25 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis F 17

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil • Free of mineral oil • For colored and black compounds that are based on general purpose rubbers • Wide range of applications • Especially good for producing molded articles, extrudates, printing blankets and/or rollers • Improves the absorption of plasticizers • Improves dimensional stability • Reduces shrinkage • Sulfur content: 17 % • Free sulfur: 1.15 % • Faktis F 17 can be dosed at between 10 and 30 phr	Sold as: Brown ground material (coarse or fine) Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 18 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis F 25

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil • Free of mineral oil • Mainly for ebonite • Reduces cold flow of hard rubber compounds and improves calenderability • Polishability of hard rubber is maintained at a dosage of up to 25 phr • Improves the absorption of plasticizers • Improves dimensional stability, reduces shrinkage • FDA/BfR-approved • Sulfur content: 23 % (highest sulfur content) • Free sulfur: 4 % • Faktis F 25 can be dosed at between 10 and 30 phr	Form of delivery: Brown ground material Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 18 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis Gloria L

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil (20 % paraffinic oil) • For light compounds that are based on general purpose rubbers • Especially suitable for foam rubber; improves pore structure, hardly influences pore growth • FDA/BfR-approved • Sulfur content: 16.5 % • Free sulfur: 1.35 % • Faktis Gloria L can be dosed between 10 and 30 phr.	Sold as: Light yellow ground material Weight per container: 25 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis Gloria 17

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked rapeseed oil • Free of mineral oil • For light compounds that are based on general purpose rubbers • Especially suitable for sponge rubber; improves pore structure, hardly influences pore growth • Recommended for printing blankets and rollers • Improves the absorption of plasticizers • Improves dimensional stability, reduces shrinkage • FDA/BfR-approved • Sulfur content: 16.5 % • Free sulfur: 1.35 % • Faktis Gloria 17 can be dosed at between 10 and 30 phr	Sold as: Light yellow ground material Weight per container: 25 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis Hamburg 4

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Partially vulcanized rapeseed oil, cross-linked with sulfur • Free of mineral oil • For light compounds that are based on general purpose rubbers • Especially suitable for sponge rubber; improves pore structure, hardly influences pore growth • Not quite as light as Faktis Gloria 17, but cheaper • FDA/BfR-approved • Sulfur content: 16.5 % • Free sulfur: 1.05 % • Faktis Hamburg 4 can be dosed at between 10 and 30 phr	Sold as: Yellow ocher ground material Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis K 14 D

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-37-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

D.O.G. COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Sulfur cross-linked modified fatty oils • Free of mineral oil • For black articles that are based on general purpose rubbers (especially well-suited for extrusion) • Improves the absorption of plasticizers • Improves dimensional stability • Cost-effective, all-purpose variety • Sulfur content: 14.5 % • Free sulfur: 1.5 % • Faktis K 14 D can be dosed at between 10 and 30 phr	Sold as: Dark brown ground material Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 12 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis NQ

Chemical name: Sulfur-containing castor oil
CAS Number: 68604-22-8

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

D.O.G. COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• For oil-resistant articles that are based on NBR and CR (comparable swelling resistance to 33 % ACN-NBR) • Improves the absorption of plasticizers • Improves swelling resistance • Reduces shrinkage • Limited storage stability • BfR-approved • Sulfur content: 12.5 % • Free sulfur: 1.05 % • Faktis NQ can be dosed at between 10 and 30 phr	Form of delivery: Light brown ground material Weight per container: 25 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 6 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Factice

Sulfur factice

Faktis PD 14

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68153-36-6; 1317-65-6; 8042-47-5

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• With sulfur cross-linked modified fatty oils and 15 % mineral oil • For black articles that are based on general purpose rubbers • Well compatible with SBR • Improves the absorption of plasticizers • Improves dimensional stability • Cost-effective, general-purpose variety • Sulfur content: 15 % • Free sulfur: 2 % • Faktis PD 14 can be dosed at between 10 and 30 phr	Sold as: Dark brown regrind Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: 1 year Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Faktis RQ 20

Chemical name: Sulfur-containing rapeseed oil
CAS Number: 68604-22-8; 72245-14-8

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Vegetable oil (mainly castor oil), cross-linked with sulfur • For oil-resistant articles based on NBR and CR • Improves the absorption of plasticizers • Improves swelling resistance • Reduces shrinkage • Optimized storage stability • Sulfur content: 19 % • Free sulfur: 5.5 % • Faktis RQ 20 can be dosed at between 10 and 30 phr	Sold as: Brown ground material Weight per container: 25 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 1 year Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Resins

In rubber processing, resins are often used as additives to improve the processing properties and characteristics of end products.

Homogenizing and tackifier resins

Deotack 1100

Chemical name: C5 hydrocarbon resin
CAS Number: 64742-16-1

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Homogenizing and tackifying resin • Excellent compatibility with various polymers (e.g. EVA, NR, SBR, BR) • Light inherent color and neutral odor • Little influence on the cross-linking system • No PAH contamination • FDA-approved • Drop point: 94-102 °C • Deotack 1100 can be dosed at between 2 and 6 phr	Sold as: Light yellow pastilles Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Deotack 70 DL

Chemical name: Xylenol-formaldehyde resin
CAS Number: 26139-75-3

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Homogenizing and tackifying resin • Mainly for polar elastomers like NBR or CR • Increases tack with little inherent stickiness • Improves processability of synthetic rubber and fillers dispersion (carbon blacks and active fillers) • Low volatility (good extraction resistance) • Especially for soft compounds or oil-resistant compounds (as swelling in aliphatic hydrocarbons/mineral oils is low) • BfR-approved • Active ingredient content: 70 % (dry liquid from Deotack P) • Deotack 70 DL can be dosed at between 5 and 20 phr	Sold as: White powder Weight per container: 25 kg bag (PE inner bag) Weight per pallet: 600 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Resins

Homogenizing and tackifier resins

Deotack P

Chemical name: Xylenol-formaldehyde resin
CAS Number: 26139-75-3

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Homogenizing and tackifying resin • Mainly for polar elastomers like NBR or CR • Increases tack with low inherent stickiness • Improved processability of synthetic rubber and fillers dispersion (carbon blacks and active fillers) • Low volatility (good extraction resistance) • Especially for soft compounds or oil-resistant compounds (as swelling in aliphatic hydrocarbons/mineral oils is low) • BfR-approved • Dynamic viscosity: 200-300 mPa*s • Deotack P can be dosed at between 3 and 15 phr	Sold as: Light yellow liquid Weight per container: 200 kg drum Weight per pallet: 800 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Deotack RS

Chemical name: Alkylphenol resin
CAS Number: 25085-50-1, 140-66-9, 98-54-4

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Homogenizing and tackifying resin • Good compatibility with NR, SBR and BR • Increases tack • Good long-term adhesion (at the same level days later) • Physical values are improved by partial co-vulcanization • For tires, conveyor belts, V-belts or rubber-metal parts, etc. • Deotack RS darkens during longer storage periods (no influence on properties) • Softening point: 107-117 °C • Deotack RS can be dosed at between 2 and 6 phr	Sold as: Yellowish pastilles Weight per container: 20 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Resins

Homogenizing and tackifier resins

Homogenisator 501

Chemical name: C9 hydrocarbon resin
CAS Number: 68131-77-1

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Homogenizing and tackifying resin • Improves the homogeneity of rubber compounds that have different polarities and viscosities • Increases the ready-to-use tackiness of unvulcanized compounds • Facilitates processing, mixing and calendering • Softening point: 95-105 °C • Homogeniser 501 can be dosed at between 3 and 15 phr	Sold as: Light yellowish pastilles Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Homogenisator 501 D

Chemical name: C9 hydrocarbon resin
CAS Number: 64742-16-1

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Homogenizing and tackifying resin • Improves the homogeneity of rubber compounds that have different polarities and viscosities • Increases the ready-to-use tackiness of unvulcanised compounds • Facilitates processing, mixing and calendering • Softening point: 95-105 °C • Homogeniser 501 D can be dosed at between 3 and 15 phr	Sold as: Grey to black flakes Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Stabilizers

Deostab N

Chemical name: Chlorosulphurised rapeseed oil with limestone
CAS Number: 68153-36-6, 1317-65-3, 7631-86-9

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

D.O.G. COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Stabilizer • Activator or stabilizer for sulfur cross-linking EPDM compounds that contain calcium oxide • No efflorescence • Higher cross-linking density in pressureless vulcanization systems • Increases modulus, reduces compression set, prevents the negative influence of calcium oxide on curing without affecting drying effects • Nitrosamine-safe • BfR-approved • Deostab N can be dosed at between 0.5 and 2 phr	Form of delivery: White ground material Weight per container: 20 kg bag Weight per pallet: 700 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Stabilizers

Micronized Pentaerythritol

Holtac D

Chemical name: Dipentaerythritol; Pentaerythritol
CAS Number: 126-58-9; 115-77-5

Hazards identification: Not classified as hazardous

Supplier: PERSTORP **PERSTORP**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Designed as PVC stabilizer • Could act as a potential acid scavenger for aqueous fission products, especially in CSM • Heat stabilizer as well as potential lead oxide substitute in CSM and CR • Di-Pentaerythritol content: min. 90 % • Particle size < 40 µm: min. 99 % • Hydroxyl number: 1310-1340 mg KOH/g • Melting point (final): 222 °C	Form of delivery: White powder Weight per container: 20 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 36 months Special storage conditions: Cool and dry

Holtac M

Chemical name: Pentaerythritol
CAS Number: 115-77-5

Hazards identification: Not classified as hazardous

Supplier: PERSTORP **PERSTORP**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Designed as PVC stabilizer • Could act as a potential acid scavenger for aqueous fission products, especially in CSM • Heat stabilizer as well as potential lead oxide substitute in CSM and CR • Monopentaerythritol content: min. 98 % • Particle size < 40 µm: Min. 99 % • Hydroxyl number: 1625-1650 mg KOH/g • Melting point (final): 260 °C	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 36 months Special storage conditions: Cool and dry

Processing aids

Stabilizers

Micronized Pentaerythritol

Holtac T

Chemical name: Pentaerythritol
CAS Number: 115-77-5

Hazards identification: Not classified as hazardous

Supplier: PERSTORP

PERSTORP

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Designed as PVC stabilizer • Could act as a potential acid scavenger for aqueous fission products, especially in CSM • Heat stabilizer as well as potential lead oxide substitute in CSM and CR • Monopentaerythritol content: min. 87 % • Particle size < 40 µm: min. 99 % • Hydroxyl number: 1600-1630 mg KOH/g • Di-pentaerythritol content: 7 %	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: 500 kg Pallet type: Other	Shelf life: 36 months Special storage conditions: Cool and dry

Processing aids

Stearates

Stearates are stearic acid salts that are used in the rubber sector as internal processing aids or external release agents. From vegetable-based to kosher or halal, many different varieties are available.

Metal stearates

Calcium stearates

Chemical name: Calcium stearate (fatty acids, C16-18, calcium salts)
CAS Number: 1592-23-0

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Stearates have many uses in gums • Calcium stearate can be used, among other things, as an acid scavenger • Stearates influence viscosity and surface properties	Sold as: White powder Weight per container: 20 kg bag / 800 kg big bag Weight per pallet: Depending on type 1,040 to 1,200 kg Pallet type: CP3	Shelf life: 24 months Special storage conditions: Store in a dry and cool place

Grade	Melting point [°C]	Oxide [%]	Free fatty acids [%] max	Moisture [%] max	Bulk density [g/l]	Sieve residue 200 mesh [%]
S	150-160	9.2-10.0	1.0	3	200	1
SW	150-160	9.2-10.0	1.0	3	200	<1
BS	165-175	10.0-11.0	0.5	3	200	1
DW	145-155	9.2-10.0	0.5	3	190	<1
WLC	145-155	9.2-9.6	0.5	3	190	<1
SP	145-160	9.2-10.0	1.0	3	500	*
PLC	145-160	9.2-9.7	0.5	3	500	*
EPH	145-160	9.0-9.9	-	4	200	1

Processing aids

Stearates

Metal stearates

Magnesium stearates

Chemical name: Magnesium stearate (Octadecanoic acid, magnesium salt)
CAS Number: 557-04-0

Hazards identification: Not classified as hazardous

Supplier: FACI **FACI**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Stearates are versatile in rubber and influence viscosity and surface properties	Sold as: White powder Weight per container: 15 kg bag / 20 kg bag Weight per pallet: Varies depending on type Pallet type: Varies depending on type	Shelf life: 24 months Special storage conditions: Store in a dry and cool place

Grade	Melting point [°C]	Oxide [%]	Free fatty acids [%] max	Moisture [%] max	Bulk density [g/l]	Sieve residue 200 mesh [%]
S	130-145	7.2-8.0	1.5	4	160	2
PH	130-145	7.2-8.0	1.5	4	160	2
SP	140-160	7.2-8.0	1.5	4	500	*
EPH	130-145	6.6-8.3	-	4	160	1

Processing aids

Stearates

Metal stearates

Sodium stearates

Chemical name: Sodium stearate (fatty acids, C16-18, sodium salts)
CAS Number: 822-16-2

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Stearates are versatile and influence viscosity and surface properties in rubber	Sold as: White powder Weight per container: 15 kg bag / 20 kg bag Weight per pallet: Varies depending on type Pallet type: Varies depending on type	Shelf life: 24 months Special storage conditions: Store in a dry place at temperatures between 5-35 °C

Grade	Melting point [°C]	Oxide [%]	Free fatty acids [%] max	Moisture [%] max	Bulk density [g/l]	Sieve residue 200 mesh [%]
S	210-220	22.0-23.5	2	2	230	0.5
FU	210-220	22.0-23.5	0.3-1.2	2	230	0.5
VFU	210-220	22.0-23.5	0.3-1.2	2	230	1
SP	210-220	22.0-23.5	2	2	350	*
EPH	210-220	22.8-26.2	0.8-1.2	2	230	0.5

Processing aids

Stearates

Metal stearates

Zinc stearates

Chemical name: Zinc stearate (fatty acids, C16-18, zinc salts)
CAS Number: 91051-01-3

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Stearates have a wide range of uses in rubber • Zinc stearate can be used as an acid scavenger, for better distribution of fillers, or as a co-activator • To prevent excessive adhesion to metal surfaces (e.g. when mixing)	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: Varies depending on type Pallet type: Varies depending on type	Shelf life: 24 months Special storage conditions: Store in a dry place

Grade	Melting point [°C]	Oxide [%]	Free fatty acids [%] max	Moisture [%] max	Bulk density [g/l]	Sieve residue 200 mesh [%]
N	118-122	13.2-13.7	1	0.5	140	1
TM	118-122	13.5-14.2	1	1.0	300	0.5
TW	118-122	13.5-14.2	1	1.0	300	<1
TB	118-122	14.0-17.0	1	1.0	300	0.5
TMD	118-122	13.5-14.2	1	1.0	300	0.5
SP	118-122	13.5-14.2	1	1.0	500	*
EPH	118-122	12.5-14.0	-	1.0	300	0.5

Processing aids

Stearates

Fatty acid esters

Pentaerythriytol tetrastearate

Chemical name: Pentaerythriytol tetrastearate (fatty acids, C16-18, tetra esters with pentaerythritol)
CAS Number: 91050-82-7

Hazards identification: Not classified as hazardous

Supplier: FACI **FACI**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Fatty acid ester • Reduces viscosity and stickiness of compounds • Improves demoldability and reduces mold contamination • Low volatility • Excellent thermostability • PETS can be dosed at up to 4 phr	Sold as: White powder Weight per container: 25 kg bag Weight per pallet: 1,200 kg Pallet type: Other	Shelf life: 12 months Special storage conditions: Keep under lock and key

Grade	Melting point [°C]	Iodine value [gI2/100g]	Acid value [mgKOH/g] max	Sap. value [mgKOH/g]	Hydroxyl value [mgKOH/g] max
S	60-65	1	2.0	188-200	12
HS	>60	1	1.5	190-197	25
Y850	50-55	1	3.0	188-200	35

Processing aids

Stearates

Fatty acids

Stearic acid

Chemical name: Stearic acid (fatty acids, C16-18, octadecanoic acid)
CAS Number: 57-11-4

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Dispersion aid: for better distribution of fillers • Anti-agglomeration agent: faster incorporation of active fillers • Used to avoid excessive adhesion to metal surfaces (e.g. during mixing) • Activator for sulfur-curing compounds	Sold as: White powder Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: CP3	Shelf life: 12 months Special storage conditions: Store in a dry and cool place

Grade	Titre [°C]	Iodine Value [gI2/100g]	Acid value [mgKOH/g]	Sap. value [mgKOH/g]	C14 [%]	C16 [%]	C18 [%]	C18-C20 [%]
D1	57-60	1	202-206	203-210	3	31	64	1
J1	56-59	1	198-205	200-208	3	31	64	1
G3	56-58	3	197-206	200-208	3	31	62	3

Processing aids

Stearates

Lubricants

Ethylene bis-stearamide

Chemical name: N,N'-ethylenedi(stearamide)
CAS Number: 110-30-5

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Waxy white solid lubricant • Temperature resistance of approx. 300 °C • Incompatible with elastomers and migrates to the surface • Depending on the desired sliding effect, recommended dosage is 0.5-4 phr (possibly more for highly filled compounds)	Sold as: White to ivory-colored powder Weight per container: 20 kg bag Weight per pallet: Varies depending on type Pallet type: Other	Shelf life: 12 months Special storage conditions: Store in a dry and cool place

Grade	Titre [°C]	Iodine Value [gI2/100g]	Acid value [mgKOH/g]	Sap. value [mgKOH/g]	C14 [%]	C16 [%]	C18 [%]	C18-C20 [%]
D1	57-60	1	202-206	203-210	3	31	64	1
J1	56-59	1	198-205	200-208	3	31	64	1
G3	56-58	3	197-206	200-208	3	31	62	3

Processing aids

Stearates

Metal soaps

Potassium stearates

Chemical name: Potassium stearate (fatty acids, C14-18, potassium salts)
CAS Number: 593-29-3

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Stearates are versatile in rubber and affect viscosity and surface properties • Used as cross-linking agent in ACM	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: 880 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Store in a dry and cool place

Grade	Melting point [°C]	Metal content [%]	Free fatty acids [%] max	Moisture [%] max	Bulk density [g/l]	Sieve residue 200 mesh [%]
Potassium	>215	12.1-13.2	2	1.5	300	2

Processing aids

Stearates

Metal soaps

Aluminium stearate

Chemical name: Aluminium stearate (fatty acids, C14-18, aluminium salts)
CAS Number: 1471315-26-0

Hazards identification: Not classified as hazardous

Supplier: FACI

FACI

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Aluminium stearate act as a catalyst to accelerate cross-linking. • It serves as a plasticiser, filler or release agent. • Aluminium stearate improves the thermal stability and due to the hydrophobic properties it reduces the water absorption. This increases its resistance to moisture and aqueous environments.	Sold as: White powder Weight per container: 20 kg bag Weight per pallet: 400 kg Pallet type: CP3	Shelf life: 24 months Special storage conditions: Store in a dry and cool place

Grade	Melting point [°C]	Ashes [%]	Free fatty acids [%] max	Moisture [%] max	Bulk density [g/l]	Sieve residue 200 mesh [%]
M-132 HG	160-170	10.5-12.5	5.8	1	270	10
M-132 PF	158-165	9.2-9.8	8	1	250	10
M-136	120-140	8.0-10.0	10-15	2	300	5

Processing aids

Processing aids

Zinc-free processing aids

Deoflow 821

Chemical name: Pentaerythritol tetrastearate = PETS
CAS Number: 91050-82-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mixture of fatty alcohols and fatty acid esters in combination with lubricants • Versatile: high temperature resistance, low volatility, low peroxide consumption • Lubricant and demolding aid • Reduces roller stickiness • Improves the dispersion of fillers • Mainly for NBR, CR, ACM, HNBR and FKM • Drop point: 60-70 °C • Deoflow 821 can be dosed at up to 3 phr	Sold as: Brownish pastilles / yellowish flakes Weight per container: 20 kg bag / 25 kg bag Weight per pallet: 500 kg / 540 kg Pallet type: Other	Shelf life: min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

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Deoflow A

Chemical name: Zinc-free dispersing and lubricating agent
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mixture of fatty alcohols and fatty acid esters in combination with lubricants • Universally applicable • Free of metal ions (also suitable for elastomers containing halogens) • Optimizes the dispersing and flow behavior without mastication effects and without hardening activation • Dispersing effect on fillers • For compounds in which processing aids that contain zinc and water have adverse effects • Drop point: 90-102 °C • Deoflow A can be dosed at between 2 and 6 phr	Sold as: Beige pastilles Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Zinc-free processing aids

Deoflow AM

Chemical name: Zinc-free dispersing and lubricating agent
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mixture of fatty alcohols and fatty acid esters in combination with lubricants • Universally applicable • Free of metal ions (also suitable for elastomers containing halogens) • Optimizes dispersion and flow behavior without mastication effects and without hardening activation • Dispersing effect on fillers • For compounds in which processing aids that contain zinc and water have adverse effects • Less expensive product • Drop point: 88-105 °C • Deoflow A can be dosed between 2 and 6 phr	Sold as: Beige pastilles Weight per container: 25 kg bag / 850 kg big bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

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Deoflow AP

Chemical name: ---
CAS Number: 67701-03-5, 91050-82-7, 9002-88-4

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Universally applicable • Free of metal ions (also suitable for elastomers containing halogens) • Optimizes dispersion and flow behavior without mastication effects and without hardening activation • Dispersing effect on fillers • For difficult-to-process synthetic rubber compounds that processing aids containing zinc and water interfere with • Drop point: 96-108 °C • Deoflow AP can be dosed between 2 and 6 phr	Sold as: Beige pastilles Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Zinc-free processing aids

Deoflow D

Chemical name: Fatty alcohol and fatty acid ester with inorganic dispersant
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Zinc-free dispersing and lubricating agent • Universally applicable • Optimizes dispersion and flow behavior without mastication effects and without hardening activation • Dispersing effect on fillers • For difficult-to-process synthetic rubber compounds that processing aids containing zinc and water interfere with • Less expensive product • Drop point: 90-104 °C • Deoflow D can be dosed at between 2 and 6 phr	Sold as: Beige-grey pastilles Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Deoflow F

Chemical name: Mixture of soaps and fatty acid esters
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Zinc-free dispersing and lubricating agent • Universally applicable • Improves demolding behavior (for complicated molded parts) • Reduces mixing viscosity • Improves release behaviour • Improves fillers dispersion leading to an improved mixing homogeneity • anhydrous • For difficult-to-process synthetic rubber compounds that processing aids containing zinc and water interfere with • Drop point: 76-86 °C • Deoflow F can be dosed at between 2 and 5 phr	Sold as: Beige pastilles Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Zinc-free processing aids

Deoflow S

Chemical name: Calcium salt of saturated fatty acids with amide esters
CAS Number: 111-57-9

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Zinc-free dispersing and lubricating agent • Universally applicable • Improves demolding behavior (for complicated molded parts) • For difficult-to-process synthetic rubber compounds that processing aids containing zinc and water interfere with • Prevents sticking when added at the beginning of the mixing process and improves demoldability when added at the end • Drop point: 100-110 °C • Deoflow S can be dosed at between 1 and 5 phr	Sold as: Beige pastilles Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Deoflow Z

Chemical name: Calcium salt with amide ester and inorganic dispersant
CAS Number: 111-57-9

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Zinc-free dispersing and lubricating agent • Universally applicable • Improves demoldability, dispersing and flow behavior • For complex molded parts • Prevents sticking when added at the beginning of the mixing process and improves demoldability when added at the end • For EPDM, NR, SBR and CR, as processing aids containing zinc cause adverse effects • Drop point: 96-110 °C • Deoflow Z can be dosed at between 1 and 6 phr	Sold as: Grey pastilles Weight per container: 25 kg bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Special processing aids

Deogum 194

Chemical name: Organosiloxane combined with lubricant
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Universally applicable • Improved demolding and relief for mixing aggregates • Reduces Mooney viscosity (improves flowability and mold-filling) • No disturbing influence of the organosiloxane on subsequent processes • During mixing we recommend the addition of Deogum 194 with fillers • For special elastomers like HNBR, ACM and ECO, but also for common elastomers • Drop point: 93-107 °C • Deoflow Z can be dosed at between 0.5 and 3 phr	Sold as: White flakes Weight per container: 25 kg bag Weight per pallet: 480 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Deogum 294

Chemical name: Organosiloxane combined with lubricant
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mainly for FKM • Improved demolding • Creates an even surface • Reduces Mooney viscosity (improves flowability and mold-filling) • Has no adverse effects on the organosiloxane during subsequent processing • When mixing, adding Deogum 294 along with other fillers is advised • For special elastomers like FKM, HNBR, ACM and ECO • Drop point: 99-108 °C • Deogum 294 can be dosed at between 0.5 and 3 phr	Sold as: Yellow-brown pastilles Weight per container: 20 kg bag Weight per pallet: 480 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Special processing aids

Deogum 384

Chemical name: Phosphoric acid ester combined with organosiloxane
CAS Number: 12645-31-7

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mainly for AEM and HT-ACM • Improves demolding and fillers dispersion • Reduces Mooney viscosity (improves flowability and mold-filling) • Reduces stickiness (in the internal mixer and in the rolling mill) • When mixing, adding Deogum 294 along with other fillers is advised • Drop point: 91-111 °C • Deogum 384 can be dosed between 0.5 and 5 phr	Sold as: White to yellowish pastilles Weight per container: 20 kg bag Weight per pallet: 480 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Special processing aids

Deogum 80

Chemical name: Combination of fatty acid derivatives and lubricants
CAS Number: 8002-13-9

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

D.O.G
COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Universally applicable • Improves demolding • Low mold contamination due to peroxide cross-linkable EPDM compounds (at low dosage) • For a wide range of rubbers, e.g. EPDM, NBR, CR, HNBR • Especially good for injection molding and transfer molding (complicated undercuts also possible) • Drop point: 107-117 °C • Deogum 80 can be dosed at between 1 and 5 phr	Sold as: Yellowish pastilles Weight per container: 20 kg bag Weight per pallet: 540 kg Pallet type: Other	Shelf life: At least 18 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Peptizer

Dispergum 24

Chemical name: Combination of zinc salts of certain fatty acids and oxidation catalyst
CAS Number: 85203-81-2, 7631-86-9

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Combines the properties of a peptizing agent and processing aid • For NR and degradable SR qualities • Can be used across a wide temperature range on roller/inner mixer • Reduction of mastication times due to the high efficiency of the oxidation catalysts and zinc soaps (drives energy savings and productivity increases) • For light-colored mixtures • Optimized fillers dispersion • Free of PCTP and DBD • Drop point: 108-118 °C • Dispergum 24 can be dosed at between 1 and 3 phr	Sold as: Brown to beige pastilles Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Peptizer

Dispergum 36

Chemical name: Highly active oxidation catalyst in a matrix of organic and inorganic additives
CAS Number: 7631-86-9, 132-16-1

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Peptizing agent • For NR and degradable SR types • High efficiency at low dosage • Can be used across a wide temperature range on roller/inner mixer • Reduces of mastication times due to the high efficiency of the oxidation catalysts and zinc soaps (drives energy savings and productivity increases) • For light-colored mixtures • Optimized fillers dispersion • Free of PCTP and DBD • Softening point: 58-68 °C • Dispergum 36 can be dosed between 0.1 and 1 phr	Sold as: Grey-green pastilles Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

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Dispergum 40

Chemical name: Highly active oxidation catalyst in polymer carrier
CAS Number: 132-16-1

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Peptizing agent • For NR and degradable SR types • High efficiency at low dosage • Temperature range for roller/internal mixer: 90-150 °C • Reduces mastication times due to high efficiency of oxidation catalysts and zinc soaps (drives energy savings and productivity increases) • Free of PCTP, DBD and zinc • Drop point: 87-100 °C • Dispergum 40 can be dosed between 0.1 and 1 phr	Sold as: Blue-black pastilles Weight per container: 25 kg bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Zinc soaps

Dispergum E

Chemical name: Zinc salts of unsaturated fatty acids
CAS Number: 67701-12-6

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Processing aid • Acts as a lubricant and reduces viscosity • Facilitates the mixing process: Saves energy and improves fillers dispersion • Low dropping point • Especially suitable for rolling mills • For extrusion and molding compounds • Recommended for soft compounds and foams • Dropping point: 78-88 °C • Dispergum E can be dosed at between 2 and 5 phr	Sold as: Beige pastilles Weight per container: 20 kg bag / 850 kg big bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

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Dispergum K

Chemical name: Zinc salts of certain saturated and unsaturated fatty acids on an inorganic carrier
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Acts as a lubricant and reduces viscosity • Facilitates the mixing process; Saves energy and improves the dispersion of fillers • For extrusion and molding compounds • Recommended for foams • FDA/BfR-approved • Less expensive product • Drop point: 96-106 °C • Dispergum K can be dosed at between 2 and 5 phr	Sold as: Beige-grey pastilles Weight per container: 25 kg bag / 850 kg big bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Zinc soaps

Dispergum PT

Chemical name: Pure zinc soap based on saturated and unsaturated fatty acids
CAS Number: 67701-12-6

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Especially recommended for SBR, BR and NR • Acts as a lubricant and reduces viscosity • Facilitates the mixing process; Saves energy and improves fillers dispersion • Positive influence on heat development • For tire compounds, extrusion and molding compounds, recommended for foams • FDA/BfR-approved • Drop point: 95-110 °C • Dispergum PT can be dosed at between 2 and 5 phr	Sold as: Beige-brown pastilles Weight per container: 25 kg bag / 850 kg big bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Dispergum R

Chemical name: Zinc soap combined with a special paraffinic lubricant
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Mild peptizing agent • Acts as a lubricant and reduces viscosity • High efficiency at low dosage • Facilitates the mixing process; Saves energy and improves fillers dispersion • For extrusion, molding compounds and foams • FDA-approved • Drop point: 92-102 °C • Dispergum R can be dosed between 2 and 5 phr	Sold as: Beige-brown pastilles Weight per container: 25 kg bag / 850 kg big bag Weight per pallet: 750 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Zinc soaps

Dispergum ZK

Chemical name: Special combination of zinc and potassium soap
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: DOG Deutsche Oelfabrik Gesellschaft für chemische Erzeugnisse mbH & Co. KG.

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• For NR, SBR, EPDM, NBR • Improves the dispersion of carbon blacks and light-colored fillers (e.g. silica or kaolins) • Highly effective with larger quantities of light-colored fillers; shortens of mixing times and reduces reagglomeration • Improvement of flowability • Shortened injection times • FDA/BfR-approved • Drop point: 90-100 °C • Dispergum ZK can be dosed between 2 and 5 phr	Sold as: Yellow-grey to beige pastilles Weight per container: 25 kg bag / 850 kg big bag Weight per pallet: 1,000 kg Pallet type: Other	Shelf life: Min. 24 months Special storage conditions: Store in the originally sealed packaging in cool and dry rooms

Processing aids

Processing aids

Nafol 1822 (B/C)

Chemical name: Mixture of alcohols of different chain lengths
CAS Number: 112-92-5, 629-96-9, 661-19-8

Hazards identification: Not classified as hazardous

Supplier: Sasol **SASOL**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Blend of alcohols with different chain lengths • Internal processing aid for FKM compounds • Improves processability • Easier demolding • No negative influence on physical properties • Combination of different melting points influences the flowability of the FKM compound (classic processing aids only start working at higher temperatures) • Nafol 1822 – as well as the 1822 B and 1822 C grades – differ in their C16-OH to C24-OH composition **Weight %** C 16 OH max. 1.0 C 18 OH 14 - 16 C 20 OH 14 - 16 C 22 OH 67 - 71 C 24 OH max. 1.0 • Nafol 1822 B is usually dosed at up to max. 1 phr	Sold as: Colorless pastilles Weight per container: 20 kg bag Weight per pallet: 480 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: None

Honeywell A-C® PE Waxes

Chemical name: Polyethylene homopolymer
CAS Number: 9002-88-4

Hazards identification: Not classified as hazardous

Supplier: Honeywell **HONEYWELL**

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Compatible with all elastomers • No adhesion to metal surfaces • Does not impair scorch, curing speed or general physical properties • No efflorescence or bleeding, whether in green or in cured state • Improved fillers dispersion (especially carbon blacks) • Improved flow and demolding properties • A-C® PE-waxes can be dosed at up to 6 phr (depending on the application)	Sold as: White powder or pellets Weight per container: 25 kg bag / 500 kg big bag Weight per pallet: Pallet type: Other	Shelf life: 24 months Special storage conditions: Store in a dry and well-ventilated place, protect from heat and direct sunlight

Release agents

Consumptive release agents for applying to mold surfaces. Improves the demolding behavior of elastomer components to increase productivity and reduce scrap.

Daifree GW-8000

Chemical name: Fluorocarbon chemicals, water-based
CAS Number: 7732-18-5, 55965-84-9

Hazards identification: Not classified as hazardous

Supplier: DAIKIN CHEMICAL EUROPE GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• For use in SBR, NBR,EPDM,FKM,CR,ACM; no silicone rubber • Milky emulsion: To be diluted at least 30 times with tap or ion-exchanged water prior to use • Solid content: 4 % mass • Can be applied at temperatures up to 200 °C • Contains silicone	Sold as: Milky liquid Weight per container: 15 kg drum Weight per pallet: On request Pallet type: Other	Shelf life: 18 months Special storage conditions: Store in a cool and well-ventilated place

Daifree GW-8500

Chemical name: Fluorocarbon chemicals, water-based
CAS Number: Unknown

Hazards identification: Not classified as hazardous

Supplier: DAIKIN CHEMICAL EUROPE GmbH

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• For use with NBR, EPDM, U, FKM; Also for silicone rubber • Milky emulsion: To be diluted at least 30 times with tap or ion-exchanged water prior to use • Solid content: 10 % mass • Can be applied at temperatures up to 200 °C • Silicone-free • Can be used for peroxide cross-linking	Sold as: Milky liquid Weight per container: 15 kg drum Weight per pallet: On request Pallet type: Other	Shelf life: 18 months Special storage conditions: Store in a cool and well-ventilated place

Release agents

Semi-permanent release agents that leave a long-lasting dry film on molds for multiple cycles/releases of rubber parts, e. g. MRG or vulcanization of hoses.

Trasys 426

Chemical name: Release agent with flourine compound
CAS Number: 63148-62-9

Hazards identification: Not classified as hazardous

Supplier: Stoner

Stoner Molding Solutions
You Mold It. We Release It.
StonerMolding.com

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Release agent designed for water-stripping demolding operations on flexible and rigid mandrels • Very low coefficient of friction • Release film is invisible, non-smearing, non-staining and chemically inert • Temperature stable up to 260 °C • Good for all types of rubber and plastics • Important: Release film must be dry before use	Sold as: White liquid Weight per container: 18.93 l drum Weight per pallet: On request Pallet type: Other	Shelf life: 12 months Special storage conditions: None

Trasys 500

Chemical name: Release agent with flourine compound
CAS Number: ---

Hazards identification: Not classified as hazardous

Supplier: Stoner

Stoner Molding Solutions
You Mold It. We Release It.
StonerMolding.com

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Semi-permanent mold release agent, particularly well-suited for injection molding applications • Very low coefficient of friction • Release film is invisible, non-smearing, non-staining and chemically inert • Temperature stable up to 315 °C • Commonly used in polymers like HNBR, EPDM, ECO, CR, CSM and other aggressive rubber compounds (FKM, peroxide-cured)	Sold as: White liquid Weight per container: 18.93 l drum Weight per pallet: On request Pallet type: Other	Shelf life: 12 months Special storage conditions: None

Release agents

Semi-permanent release agents that leave a long-lasting dry film on molds for multiple cycles/releases of rubber parts, e. g. MRG or vulcanization of hoses.

Trasys 818

Chemical name: Release agent with flourine compound
CAS Number: 26172-55-4

Hazards identification:

Supplier: Stoner

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Semi-permanent mold release agent • Very low coefficient of friction • Release film is invisible, non-smearing, non-staining and chemically inert • Especially used for silicone rubber	Sold as: White liquid Weight per container: 18.93 l drum Weight per pallet: On request Pallet type: Other	Shelf life: 12 months Special storage conditions: None

Trasys 9825

Chemical name: Release agent based on crosslinkable siloxane resins (polysiloxanes)
CAS Number: 57-55-6

Hazards identification: Not classified as hazardous

Supplier: Stoner

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• Semi-permanent mold release agent for compression, transfer and injection molding • Very low coefficient of friction • Release film is invisible, non-smearing, non-staining and chemically inert • Commonly used for HNBR, NBR and EPDM • Also used for acrylic rubbers as well as flouroelastomers	Sold as: White liquid Weight per container: 18.93 l drum Weight per pallet: On request Pallet type: Other	Shelf life: 12 months Special storage conditions: None

Retarders

Deovulc CTP-PVI

Chemical name: N-(cyclohexylthio)phthalimide
CAS Number: 17796-82-6

Hazards identification:

Supplier: DOG Deutsche Oelfabrik Gesellschaft
für chemische Erzeugnisse mbH & Co. KG

COMPETENCE IN ADDITIVES

Technical data:	Sold as / Weight:	Shelf life / Special storage conditions:
• For NR, SBR, NBR, IIR and EPDM • Extends flow times and storage stability • Seized mixtures can become processable again • When mixing, adding accelerators is advised • Often used in combination with sulfenamides/thiurams/ guanidines • Sulfur content: 11.5-13.5 % • Melting point: 89-94 °C • Deovulc CTP-PVI can be dosed at between 0.1 and 1 phr (> 0.5 phr slight efflorescence and slight discoloration of light-colored compounds possible when exposed to sunlight)	Sold as: White to yellowish powder Weight per container: 25 kg bag Weight per pallet: 600 kg Pallet type: Other	Shelf life: 24 months Special storage conditions: Store in the original and sealed packaging in cool and dry rooms

BACK TO OVERVIEW

Further Information

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