



Lupolen 4552D black

Compounded Polyolefin

Product Description

Lupolen 4552D black is a UV and thermal stabilised high-density polyethylene with a multi-modal molecular weight distribution designed for extrusion. *Lupolen 4552D black* is produced with the advanced *Hostalen* technology which provides the material with excellent mechanical and physical properties. The excellent dispersion of the fine particle sized carbon black ensures the material has excellent weathering resistance.

Lupolen 4552D black fulfils the requirements of DIN 30670, NFA 49710, CAN, CSA-Z245.21-M98 and prEN 10285 when used in combination with the maleic-anhydrided grafted adhesives *Lucalen G3710E P* and a compatible fusion-bonded epoxy powder.

Lupolen 4552D black is recommended as the topcoat layer in 3LPE pipe coating applications and is suitable for severe laying conditions even at elevated temperatures. *Lupolen 4552D black* can be used up to 85°C service temperature of the pipeline when used in combination with the maleic-anhydride grafted adhesives *Lucalen G3710E* or *Lucalen G3710E P* and a compatible fusion-bonded epoxy powder.

This grade is available in black, in pellet form.

Product Characteristics

Status	Commercial: Active
Test Method used	ISO
Availability	Europe, North America, Asia-Pacific, Australia/NZ, Africa-Middle East, Latin America
Processing Methods	Extrusion Coating
Features	Bacteria Resistant, Good Chemical Resistance, Good Creep Resistance , High Density, High ESCR (Environmental Stress Cracking Resistance), Fungus Resistant, Good Impact Resistance , Ozone Resistant, Good UV Resistance, Low to No Water Absorption , Good Weather Resistance

Typical Customer Applications Pipe Coating

Typical Properties	Method	Value	Unit
Physical			
Density	ISO 1183	≥ 930	g/cm ³
Note: Base polymer		0.956	g/cm ³
Note: Compound			
Melt flow rate (MFR)	ISO 1133		
(190°C/2.16kg)		0.42	g/10 min
(190°C/5.0kg)		1.7	g/10 min
Bulk density (23°C)	ISO 60	>0.5	g/cm ³
Mechanical			
Tensile Modulus (23 °C, v = 1 mm/min)	ISO 527-1, -2	900	MPa
Tensile Stress at Yield (23 °C, v = 50 mm/min)	ISO 527-1, -2	23	MPa
Tensile Strain at Break	ISO 527-1, -2	700	%

ESCR (ASTM-Fo)	ASTM D 1693/IEC 538	>2000	h
Impact			
Notched izod impact strength (- 20 °C)	ISO 180	≥ 3	kJ/m ²
Hardness			
Shore hardness D	ISO 868/ASTM D 2240	60	
Thermal			
Melting temperature		130	°C
<i>Note: ISO 3146</i>			
Brittleness Temperature	ASTM D 746	< -70	°C
Vicat softening temperature A/50	ISO 306	124	°C
Oxidation induction time (OIT) (200°C)	ISO 11357-6 / EN 728	>30	min
Oxidation induction time (OIT) (210°C)	ISO 11357-6 / EN 728	≥ 30	min
Oxidation induction time (OIT) (220°C)	ISO 11357-6 / EN 728	≥ 20	min
Electrical			
Specific volume resistivity	ASTM D 257/IEC 93	10E16	
Additional Information			
Carbon black content	ISO 6964	2.2	%
Moisture content		0.035	%
<i>Note: Test method: DIN EN ISO 15512</i>			

Additional Properties

Processing:

Recommended melt temperatures: 190-260 °C.

Unless specifically indicated, the grade mentioned is not suitable for applications in the pharmaceutical/medical sector.

Notes

Typical properties; not to be construed as specifications.

Further Information

Lupolen 4552D black

Conveying:

Conveying equipment should be designed to prevent production and accumulation of fines and dust particles that may be contained to a small extent in polymer materials. These particles can under certain conditions pose an explosion hazard. We recommend the conveying system used is equipped with adequate filters, is operated and maintained so that no leak develops and adequate electrical grounding exists at all times.

Health and Safety:

Special requirements apply to certain applications such as food contact end-use and direct medical use. For specific information on regulatory compliance contact your local representative.

Workers should be protected from the possibility of skin or eye contact with molten polymer. Safety glasses are suggested as a minimum precaution to prevent mechanical or thermal injury to the eyes.

Molten polymer may be degraded if it is exposed to air during any of the processing and off-line operations. The products of degradation have an unpleasant odour. In higher concentrations they may cause irritation of the mucus membranes. Fabrication areas should be ventilated to carry away fumes or vapours. Legislation on the control of emissions and pollution prevention must be observed. If the principles of sound manufacturing practice are adhered to and the place of work is well ventilated, no health hazards in processing the material have been reported.

The material will burn when supplied with excess heat and oxygen. It should be handled and stored away from contact with direct flames and/or ignition sources. In burning the material

generates considerable heat and may generate dense black smoke. Minor fires can be extinguished by water, developed fires should be extinguished by heavy foams forming an aqueous or polymeric film. For further information about safety in handling and processing please refer to the Material Safety Data Sheet (MSDS).

Storage:

The material is packed in 25 kg bags or in bulk containers protecting it from contamination. Storage times of natural materials longer than 6 months may have a negative influence on the quality of the final product (for example the brightness). It is generally recommended to convert all materials latest within 6 months of production.

The material is subjected to degradation by ultra-violet radiation or by high storage temperatures. Therefore the material must be protected from direct sunlight, temperatures above 40°C and high atmospheric humidity during storage.

Further unfavourable storage conditions are large fluctuations in ambient temperature and high atmospheric humidity. These conditions may lead to moisture condensing inside the packaging. Under these circumstances, it is recommended to dry the material before use. Unfavourable storage conditions may also intensify the material's slight characteristic odour.

Due the hygroscopic character of the carbon black pigments, black coloured materials may pick up moisture even under appropriate storage conditions. If this is the case it is recommended to dry the material before processing. After a storage period of more than 3 months drying of such material is recommended as standard practice.

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Users should review the applicable Material Safety Data Sheet before handling the product.

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