Technical Data Sheet

# *Lupolen* 4552D BLACK

High Density Polyethylene

## Product Description

*Lupolen* 4552D black is a UV and thermal stabilised high-density polyethylene with a multimodal 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.

## Regulatory Status

For regulatory compliance information, see *Lupolen* 4552D BLACK Product Stewardship Bulletin (PSB) and Safety Data Sheet (SDS).

This grade is not intended for medical and pharmaceutical applications.

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|---|---|
| **Status** | Commercial: Active |
| **Availability** | Africa-Middle East; Asia-Pacific; Australia and New Zealand; Europe; North America; South & Central America |
| **Application** | Pipe Coating |
| **Market** | Industrial, Building & Construction; Pipe |
| **Processing Method** | Extrusion Coating |
| **Attribute** | Bacteria Resistant; Fungus Resistant; Good Chemical Resistance; Good Creep Resistance; Good Impact Resistance; Good UV Resistance; Good Weather Resistance; High Density; High ESCR (Environmental Stress Cracking Resistance); Low to No Water Absorption; Ozone Resistant |

| Typical Properties | Nominal Value | Units | Test Method |
|---|---|---|---|
| **Physical** | | | |
| Melt Flow Rate | | | |
| (190 °C/2.16 kg) | 0.42 | g/10 min | ISO 1133-1 |
| (190 °C/5.0 kg) | 1.7 | g/10 min | ISO 1133-1 |
| Density | 0.956 | g/cm³ | ISO 1183-1/A |
| Bulk Density, (23 °C) | > 0.5 | g/cm³ | ISO 60 |
| **Mechanical** | | | |
| Tensile Modulus | 900 | MPa | ISO 527-1, -2 |
| Tensile Stress at Yield | 23.0 | MPa | ISO 527-1, -2 |
| Tensile Strain at Break | 700 | % | ISO 527-1, -2 |
| Environmental Stress Crack Resistance | > 2000 | hr | ASTM D1693 |
| **Film** | | | |



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| | | | |
|---|---|---|---|
| Water Content | <= 0.1 | % | ISO 15512 |
| **Impact** | | | |
| Notched Izod Impact Strength, (-20 °C) | >= 3 | kJ/m² | ISO 180 |
| **Hardness** | | | |
| Shore Hardness, (Shore D) | 60 | | ISO 868 |
| **Thermal** | | | |
| Vicat Softening Point | 124 | °C | ISO 306 |
| Oxidation Induction Time, (210 °C) | >= 30 | min | ISO 11357-6 |
| Peak Melting Point | 130 | °C | ISO 11357-3 |
| **Electrical** | | | |
| Volume Resistivity | 10E16 | ohm*cm | ASTM D257 |
| **Additive** | | | |
| Carbon Black Content | 2.20 | % | ISO 6964 |

## Notes

These are typical property values not to be construed as specification limits.

## Processing Techniques

Users should determine the conditions necessary to obtain optimum product properties and suitability of the product for the intended application.

Recommended processing temperatures: 200 °C to 260 °C.

Specific recommendations for resin type and processing conditions can only be made when the end use, required properties and fabrication equipment are known.

## Further Information

### Health and Safety:

The resin is manufactured to the highest standards, but special requirements apply to certain applications such as food end-use contact 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 minimal 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 may have an unpleasant odor. 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 should be observed.

The resin 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. While burning, the resin contributes high heat and may generate a dense black smoke.

Recycled resins may have previously been used as packaging for, or may have otherwise been in contact with, hazardous goods. Converters are responsible for taking all necessary precautions to ensure that recycled resins are safe for continued use.

For further information about safety in handling and processing please refer to the Safety Data Sheet.

### Conveying:

Conveying equipment should be designed to prevent production and accumulation of fines and dust particles that are contained in polymer resins. These particles can under certain conditions pose an explosion hazard. Conveying systems should be grounded, equipped with adequate filters and regularly inspected for leaks.



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## Storage:

The resin is packed in 25 kg bags, octabins or bulk containers protecting it from contamination. If it is stored under certain conditions, i. e. if there are large fluctuations in ambient temperature and the atmospheric humidity is high, moisture may condense inside the packaging. Under these circumstances, it is recommended to dry the resin before use. Unfavorable storage conditions may also intensify the resin's slight characteristic odor.

Resin should be protected from direct sunlight, temperatures above 40°C and high atmospheric humidity during storage. Higher storage temperatures may reduce the storage time.

The information submitted is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. This information does not remove the obligation of the customer to inspect the material on arrival and notify us of any faults immediately. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

## Company Information

For further information regarding the LyondellBasell company, please visit http://www.lyb.com/.

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