



SASOL



## SASOL CHEMICALS

Low density polyethylene (LDPE)  
product overview - film, moulding and extrusion



## Low Density Polyethylene (LDPE) Product overview

### SASOL AT A GLANCE

Sasol is an international integrated chemicals and energy company that leverages technologies and the expertise of our 30 400 people working in 36 countries. We develop and commercialise technologies, and build and operate world-scale facilities to produce a range of high-value product streams, including liquid fuels, chemicals and low-carbon electricity.

### SASOL CHEMICALS

Sasol Chemicals is a producer and marketer of a range of commodity chemicals based on the Fischer Tropsch (FT) and natural gas value chains including chemical feedstocks of ethane, ethylene, propylene and ammonia. Final products include polymers, explosives, fertilisers, mining reagents (caustic soda, sodium cyanide), and a range of alcohols, ketones, acrylate monomers, and other oxygenated solvents.

Final products marketed through the Polymers division include low density polyethylene (LDPE), hexene linear low density polyethylene (hLLDPE), polypropylene (PP), and polyvinyl chloride (PVC) as well as propylene and ethylene monomers. Through this product portfolio we offer polymer solutions for a broad range of applications and industries.

Our polymers are marketed throughout Sub-Saharan Africa, Europe, Americas and Asia and we are active in over 75 countries globally.

Our Polymer Technology Services Centre in Johannesburg provides expertise and technical service support to external customers and also undertakes polymer-related applications research and development applicable to the Polymers division.

### POLYETHYLENE OVERVIEW

Polyethylene grades are characterised primarily on the basis of their density. Low density polyethylene (LDPE) is the oldest form of polyethylene and is produced under high pressure conditions which promote the formation of a high degree of both long and short chain branching within the polymer structure. These characteristics give rise to resins which are soft, tough and flexible, as well as being easy to process.

Hexene linear low density polyethylene (hLLDPE) comprises a more linear structure with limited short chain branching produced through the co-polymerisation of ethylene with short chain alpha-olefins such as butene or hexene. Sasol uses 1-hexene as a co-monomer, which provides a tougher hLLDPE product. The hLLDPE resins exhibit improved mechanical properties over LDPE, such as higher tensile strength, higher impact, and increased puncture resistance. In film conversion, the use of hLLDPE can deliver lower gauge (thickness) films than LDPE, however these films are not as easy to process.

Both LDPE and hLLDPE are predominantly used in flexible blown film extrusion applications where the relative benefits of each polymer can be combined to produce optimum film performance properties. The inherent toughness and mechanical property benefits of hLLDPE also allow this polymer to be widely used in rotational moulding applications such as water and chemical tanks, storage bins and road barriers, as well as a range of rigid applications. Injection moulding applications for LDPE include the production of closures and lids.

### SASOL POLYETHYLENE PRODUCT AND SERVICE OFFERING

- High quality products manufactured to world class standards.
- Sales and technical support provided by an experienced and qualified team.
- A customer focused organisation with a track record of commitment to meeting the requirements of all customers.
- An established production technology platform providing a sustainable base to support the growth aspirations of our business and that of our customers.



## LDPE grade range - film

Grade name	MFI (g/10min) <sup>1</sup>	Nominal density (g/cm <sup>3</sup> ) <sup>2</sup>	Additive package	Features	Applications
LF2103	0.30	0.921	Antioxidant	Good mechanical properties High impact strength High tear strength Wide processing range	Heavy duty shrink film (>100 µm) Heavy duty sacks Agricultural film Thick film
LF2207	0.75	0.922	Antioxidant	Good mechanical properties Excellent clarity & gloss	Non-slip shrink film Lamination film Blending resin to modify coefficient of friction (COF)
LF2207F	0.75	0.922	Antioxidant Medium antiblock	Good mechanical properties Good optical properties	Light duty shrink film (50 to 80 µm) Lamination film Blending resin to modify COF
LF2207M	0.75	0.922	Antioxidant Medium antiblock Medium slip	Good mechanical properties Good optical properties	General packaging film (35 to 80 µm) Shrink film Form, fill and seal film Boutique bags
LF2220	2.0	0.922	Antioxidant	Excellent clarity & gloss High COF Good drawdown	Non-slip shrink film Lamination film Blending resin to modify COF
LF2220M	2.0	0.922	Antioxidant Medium antiblock Medium slip	Good optical properties Wide sealing range Good drawdown	General packaging film (20 to 50 µm) Clarity film Boutique bags Thin film

<sup>1</sup>190C; 2.16 kg

<sup>2</sup>Density measured according to ASTM D1505 without annealing



## LDPE grade range - moulding and extrusion

Grade name	MFI (g/10min) <sup>1</sup>	Nominal density (g/cm <sup>3</sup> ) <sup>2</sup>	Flexural Modulus (MPa)	Features	Applications
<b>Blow moulding</b>					
LF2103	0.30	0.921	250	High melt strength Flexible Wide processing range Good mechanical properties	Blow moulded bottles and tubes
LF2207	0.75	0.922	250	Medium melt strength Flexible	Blow moulded bottles and tubes
<b>Injection moulding</b>					
LM2065	6.5	0.918	252	Additive free Medium flow Flexible Good transparency	Injection moulded containers and closures
LM1920	20	0.919	240	Additive free High flow Very flexible Good transparency	Injection moulded containers and closures
<b>Pipe/profile extrusion</b>					
LF2103	0.3	0.921	250	High melt strength Flexible Wide processing range	General purpose low pressure pipe Extruded profiles
LF2207	0.75	0.922	250	Medium melt strength Flexible	Pool Hose Extruded profiles
<b>Expanded Polyethylene (EPE)</b>					
LF2207	0.75	0.922	250	Medium melt strength	Foamed polyethylene sheeting and profiles
LF2220	2.0	0.922	260	Medium melt strength	Foamed polyethylene sheeting and profiles

<sup>1</sup>190C; 2.16 kg

<sup>2</sup>Density measured according to ASTM D1505 without annealing

