



**sasol**



## **SASOL CHEMICALS**

Hexene linear low density polyethylene (hLLDPE)  
product overview – film, moulding and extrusion

## Hexene linear Low Density Polyethylene (hLLDPE) 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.

#### Sales enquiries

Phone: +27 (0)10 344 5000  
email: [polymers@sasol.com](mailto:polymers@sasol.com)

#### Technical support

Phone: +27 (0)11 458 0700  
Fax: +27 (0)11 458 0734

[www.sasol.com](http://www.sasol.com)

## hLLDPE 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
<b>Hexene copolymer</b>					
HF2308E	0.8	0.923	Antioxidant Low antiblock	Excellent mechanical properties Excellent puncture resistance High impact strength	Heavy duty film (>75 µm) Blending into HDPE or LDPE
HF2110	1.0	0.921	Antioxidant	Outstanding mechanical properties Good heat sealing range	Blown stretch film Blending into LDPE
HF2910T	1.0	0.929	Antioxidant High antiblock High slip	Outstanding mechanical properties Good heat sealing range Excellent drawdown Good stiffness	General packaging thin film (10 to 30 µm) Blending into LDPE Not recommended for lamination film
HF2020	2.0	0.920	Antioxidant	Medium strength LLDPE Good heat sealing range	Cast stretch film (mono and co-extruded)

<sup>1</sup>190°C; 2.16 kg

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

Notes:

1. Surface properties of grades containing slip and antiblock additives will be dependent on film thickness.
2. For further details refer to the relevant Product Data Sheet.

## hLLDPE grade range - moulding and extrusion

Grade name	MFI (g/10min) <sup>1</sup>	Nominal density (g/cm <sup>3</sup> ) <sup>2</sup>	Features	Applications
<b>Injection moulding - Hexene copolymer</b>				
HM2420	20	0.924	High gloss Good low temperature performance	Injection moulded containers
HR3950	5	0.939	Good ESCR Medium rigidity Medium flow Good low temperature performance	Injection moulded containers
<b>Masterbatch extrusion - Hexene copolymer</b>				
HM2420	20	0.924	High flow	Base for colour and additive concentrates

## hLLDPE grade range - moulding and extrusion

Grade name	MFI (g/10min) <sup>1</sup>	Nominal density (g/cm <sup>3</sup> ) <sup>2</sup>	Features	Applications
<b>Rotational moulding - Hexene copolymer</b>				
HR3935	3.5	0.939	Good heat stability High rigidity Good ESCR Excellent impact strength	Rotomoulded rigid parts for indoor use
HR3935U	3.5	0.939	UV stabilised Good heat stability High rigidity Good ESCR Excellent impact strength	Rotomoulded rigid parts for outdoor use
HR3950	5	0.939	High rigidity Good ESCR	Rotomoulded rigid parts for indoor use
HR3950U	5	0.939	UV stabilised High rigidity Good ESCR	Rotomoulded rigid parts for outdoor use

<sup>1</sup>190°C; 2.16 kg

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

Grade name	MFI (g/10min) <sup>1</sup>	Nominal density (g/cm <sup>3</sup> ) <sup>2</sup>	Features	Applications
<b>Pipe / profile extrusion - Hexene copolymer</b>				
HF2110	1	0.921	Medium rigidity Good burst strength Good ESCR	General purpose low pressure pipe
HF2020	2	0.920	Good burst strength Good ESCR	General purpose low pressure pipe

### Notes:

1. All grades contain antioxidant
2. For further details refer to the relevant Product Data Sheet.

### Sales enquiries

Phone: +27 (0)10 344 5000  
email: [polymers@sasol.com](mailto:polymers@sasol.com)

### Technical support

Phone: +27 (0)11 458 0700  
Fax: +27 (0)11 458 0734

[www.sasol.com](http://www.sasol.com)

### DISCLAIMER

This publication contains information provided in good faith and is indicative, based on Sasol's current knowledge on the subject. No guarantee or warranty is intended or implied. We reserve the right to make changes as a result of technological progress or development. Any information, including suggestions for use of products, should not preclude experimental testing and verification, to ensure the suitability of a product for each specific application. Users must also abide by local and international laws and obtain all necessary permits when required to do so. Prior to handling a hazardous product, consult its safety data sheet. In case of questions or queries, please contact Sasol through our customer service channels. All products purchased or supplied by Sasol Chemicals are subject to the terms and conditions set out in the contract, order confirmation and/or bill of lading.