QAPCO
QATAR PETROCHEMICAL COMPANY

Lotrène FB3003

LOW DENSITY POLYETHYLENE

Low Density Polyethylene

DESCRIPTION

Lotrène® FB3003 is an additive free grade, produced by an autoclave high pressure process, mainly recommended for heavy duty film applications.

PROPERTIES

Lotrène® FB3003 has a molecular structure allowing to produce films with excellent mechanical properties, outstanding shrink properties and excellent bubble stability. It has a high stress cracking resistance. Lotrène® FB3003 is mainly recommended for heavy duty film applications.

POLYMER PROPERTIES	Value	UNIT	TEST METHOD
Melt Flow Index	0.30	g/10 min.	ASTM D-1238
Density @ 23 °C	0.920	g/cm3	ASTM D-1505
Crystalline Melting Point	109	°C	ASTM E-794
Vicat Softening Point	96	°C	ASTM D-1525

FILM PROPERTIES	Value	UNIT	TEST METHOD
Tensile Strength @ Yield MD/ TD	14/11	MPa	ASTM D-882
Tensile Strength @ Break MD/ TD	30/27	MPa	ASTM D-882
Elongation @ Break MD/ TD	250/555	%	ASTM D-882
Tear resistance MD/ TD	21/26	N/mm	ASTM D-1922
Impact Strength, F 50	175	g	ASTM D-1709
Puncture Force	60	N	Internal Method
Coefficient Of friction	0.50		ASTM D-1894
Haze	34	%	ASTM D-1003
Gloss @ 45°	19		ASTM D-2457

(Film properties stated above have been obtained using 40 µm blown films laboratory test specimens produced under following conditions: 45 mm screw with L/D = 30, die diameter 120 mm, die gap 1.56 mm, BUR 2.5:1).

PROCESSING

Lotrène® FB3003 can be easily processed on all types of extruders designed for polyethylene.
The melt temperature is suggested to be in the range of 180-210 °C.
The best and balanced properties of the blown film are achieved at blow up ratios between 2:1 and 3.5:1.
The recommended thickness range is from 50 µm to 250 µm.

APPLICATIONS

- Heavy duty bags
- Industrial shrink film and shrink film for pallets
- Construction film
- Agricultural film
- Drip irrigation pipe
- Small blow molded bottles

HANDLING & STORAGE

Polyethylene products should be stored in their original packaging or in clean appropriate silos.
The products should be stored in a dry and well-ventilated area and should not be exposed to direct sunlight and/or heat in any form since this may adversely affect their properties.
As a general rule, our products should not be stored for more than three months from receipt date.

SAFETY

Under normal conditions Lotrène® products do not present a toxic hazard through skin contact or inhalation.
For detailed information please refer to the Safety Data Sheet.

FOOD CONTACT & REACH

Lotrène® polyethylene products manufactured by Qatar Petrochemical Company (QAPCO) Q.S.C. comply with US, EU and other food contact legislations. Limitations may apply.
All QAPCO Lotrène products are complying with REACH Regulation 1907/2006/EC. The aims of this regulation are to improve the protection of human health and the environment through better and earlier identification of the intrinsic properties of chemical substances.
Please contact your Muntajat representative for detailed compliance certificates.

NOT SUITABLE FOR PHARMACEUTICAL OR MEDICAL APPLICATIONS

TECHNICAL DISCLAIMER

The values reported in this technical data sheet are the results of tests carried out in accordance with standard test procedures in a laboratory environment. Actual properties may vary depending on batch and extrusion conditions. Therefore, these values should not be used for specification purposes.
Before using this product, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question, and is further advised against relying on the information contained herein as it may relate to any specific use or application.
It is the ultimate responsibility of the user to ensure that the product is suitable for, and the information is applicable to, the user's specific application. QAPCO does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, expressed or implied, or allegedly arising from any usage of any trade or from any course of dealing, in connection with the use of the information contained herein or the product itself.
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QAPCO
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PRODUCT DATA SHEET

sasol

LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE

Low Density Polyethylene

LF2103

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Date of issue : March 2017

www.sasol.com

Melt Index: 0.33 g/10min

Density: 0.921 g/cm^3

Features
- Tubular Resin
- Good mechanical properties
- Wide processing range

Applications
- Blow moulded bottles and tubes
- General purpose low pressure pipe
- Extruded profiles

Additives
- Antioxidant

Typical properties (not to be construed as specifications)		Value (SI)	Value (English)	Method
Resin Properties	Melt Index (190°C/2.16kg)	0.33 g/10min	0.33 g/10min	ASTM D1238
	Nominal density	0.921 g/cm^3	0.921 g/cm^3	ASTM D1505
Product Properties	Tensile strength at yield	12 MPa	1740 psi	ASTM D638[1)]
	Tensile strength at break	16 Mpa	2320 psi	ASTM D638[1)]
	Elongation at break	650 %	650 %	ASTM D638[1)]
	Flexural modulus	250 MPa	36250 psi	ASTM D790
	ESCR F_{50}	80 hr	80 hr	ASTM D1693[2)]
	Shore D Hardness	53	53	ASTM D2240
	Vicat softening temperature	100 °C	100 °C	ASTM D1525

1) **Crosshead speed 500mm/min**
2) **100% Igepal CO630**

SABIC® LDPE PCG06

LOW DENSITY POLYETHYLENE

DESCRIPTION

SABIC® LDPE grades for healthcare applications are produced under controlled conditions resulting in high product quality, consistency and a high level of purity.

SABIC® LDPE PCG06 is an additive-free grade with high purity and very low migration levels. It is typically used for semi-rigid IV containers for Large Volume Parenterals (LVP) obtained by Blow Fill Seal (BFS) process.

Compliance to Regulations
SABIC® LDPE PCG06 complies with the relevant monographs of the European Pharmacopoeia (EP) and the United States Pharmacopoeia (USPVI).

TYPICAL PROPERTY VALUES

Revision 20181012

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
POLYMER PROPERTIES			
Melt Flow Rate			
at 190 °C and 2.16 kg	0.55	dg/min	ISO 1133
Density	928	kg/m³	ASTM D1505
OPTICAL PROPERTIES			
Gloss (45°)	70	‰	ASTM D2457
Haze	6	%	ASTM D1003
FILM PROPERTIES			
Impact strength	25	kJ/m	ASTM D4272
Tear strength TD	35	kN/m	ISO 6383-2
Tear strength MD	45	kN/m	ISO 6383-2
Tensile test film			
Stress at break TD	22	MPa	ISO 527-3
Stress at break MD	21	MPa	ISO 527-3
Yield stress TD	14	MPa	ISO 527-3
Modulus of elasticity TD	340	MPa	ISO 527-3
Modulus of elasticity MD	290	MPa	ISO 527-3
Yield stress MD	13	MPa	ISO 527-3
Tensile test film			
Strain at break TD	>500	%	ISO 527-3
Strain at break MD	>200	%	ISO 527-3
Coefficient of friction	1	-	ASTM D1894
Blocking	10	g	SABIC method
Re-blocking	30	g	SABIC method
THERMAL PROPERTIES			
Vicat Softening Temperature			
at 10 N (VST/A)	106	°C	ISO 306
DSC test			
melting point	115	°C	DIN 53765

PRODUCT DATA SHEET

LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE

Low Density Polyethylene

LF2207

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Date of issue : March 2017

www.sasol.com

Melt Index: 0.75 g/10min

Density: 0.921 g/cm^3

Features
- Tubular Resin
- Good flexibility

Applications
- Blow moulded bottles and tubes
- Pool hose
- Extruded profiles
- Foamed polyethylene sheeting and profiles

Additives
- Antioxidant

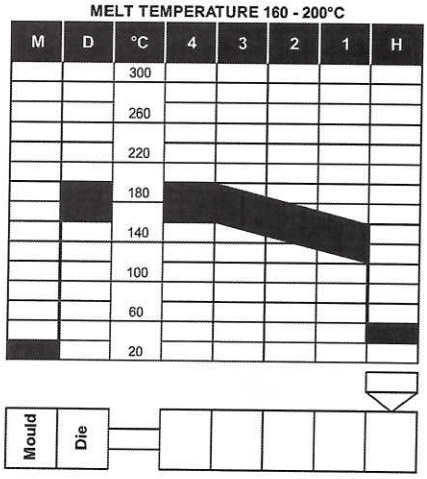
Typical properties (not to be construed as specifications)		Value (SI)	Value (English)	Method
Resin Properties	Melt Index (190°C/2.16kg)	0.75 g/10min	0.75 g/10min	ASTM D1238
	Nominal density	0.922 g/cm^3	0.922 g/cm^3	ASTM D1505
Product Properties	Tensile strength at yield	12 MPa	1740 psi	ASTM D638[1)]
	Tensile strength at break	15 MPa	2175 psi	ASTM D638[1)]
	Elongation at break	450 %	450 %	ASTM D638[1)]
	Flexural modulus	250 MPa	36250 psi	ASTM D790
	ESCR F_{50}	2.1 hr	2.1 hr	ASTM D1693[2)]
	Shore D Hardness	52	52	ASTM D2240
	Vicat softening temperature	99 °C	99 °C	ASTM D1525

1) **Crosshead speed 500mm/min**
2) **100% Igepal CO630**

LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE

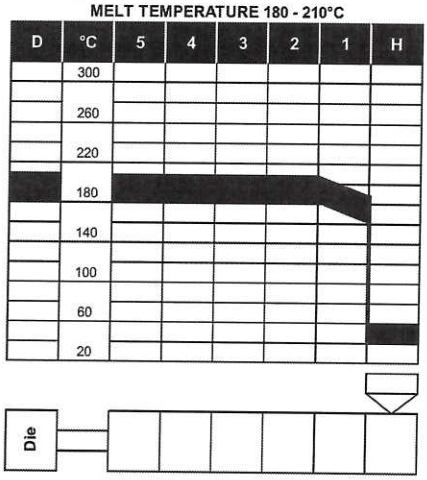
Blow moulding

MELT TEMPERATURE 160 - 200°C



Extrusion

MELT TEMPERATURE 180 - 210°C



Processing

LF2207 can be processed on all standard extrusion and blow moulding equipment. Processing temperatures need to be optimised with any equipment, but the melt temperature range should typically be 160°C to 200°C.

Handling

Workers should be protected from the possibility of skin or eye contact with molten polymer. Safety glasses are suggested as a minimal protection to prevent possible mechanical or thermal injury to the eyes. Fabrication areas should be ventilated to carry away fumes or vapours. Please consult the material safety data sheet (SDS) for more detailed information.

Storage

As ultraviolet light may cause a change in the material, all resins should be protected from direct sunlight during storage. If stored in cool (<25°C), dry area with low ambient light levels, polyolefin resins are expected to maintain their original material and processing properties for at least 12 months.

Combustibility

Polyethylene resins will burn when supplied adequate heat and oxygen. They should be handled and stored away from contact with direct flames and/or other ignition sources. In burning, polyethylene resins contribute high heat and may generate a dense black smoke. Fires can be extinguished by conventional means with water and water mist preferred. In enclosed areas, fire fighters should be provided with self contained breathing apparatus.

Conveying

Conveying equipment should be designed to prevent accumulation of fines and dust particles that are contained in all polypropylene resins. The fines and dust particles can, under certain conditions, pose an explosion hazard. We recommend that the conveying system used:

- be equipped with adequate filters
- is operated and maintained in such a manner to ensure no leaks develop
- that adequate grounding exists at all times

It is further recommended that good housekeeping is practiced throughout the facility.

Regulatory & Legal Compliance

This material complies with FDA regulation 21 CFR 177.1520 when used unmodified and according to good manufacturing practices for food contact applications. Refer to applicable food contact compliance statement which is available on request.

This material is not medically approved and should therefore not be used in any such application.

ELITE™ 5400G

Enhanced Polyethylene Resin

The Dow Chemical Company

PROSPECTOR®

www.ulprospector.com

Technical Data

Product Description

ELITE™ 5400G Enhanced Polyethylene Resin is a copolymer produced via INSITE™ Technology from Dow. It offers a unique combination of low seal initiation, moderate stiffness and low blocking tendencies for good performance on automated packaging equipment.

- For food and specialty packaging films
- Extremely high impact resistance and good tear properties
- Good optical properties

Complies with:

- U.S. FDA FCN 424
- EU, No 10/2011
- Canadian HPFB No Objection

Consult the regulations for complete details.

General			
Material Status	• Commercial: Active		
Literature [1]	• Technical Datasheet		
Search for UL Yellow Card	• The Dow Chemical Company		
Availability	• Asia Pacific	• Latin America	• North America
Additive	• Antiblock: No	• Processing Aid: No	• Slip: No
Agency Ratings	• EU No 10/2011	• FDA FCN 424	• HPFB (Canada) No Objection
Forms	• Pellets		
Processing Method	• Blown Film		

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity	0.916	g/cm³	ASTM D792
Melt Mass-Flow Rate (MFR) (190°C/2.16 kg)	1.0	g/10 min	ASTM D1238

Films	Nominal Value	Unit	Test Method
Film Thickness - Tested	25	µm	
Film Puncture Energy	6.67	J	Internal Method
Film Puncture Force	68.9	N	Internal Method
Film Puncture Resistance	32.3	J/cm³	Internal Method
Film Toughness			ASTM D882
MD	83.6	J/cm³	
TD	95.1	J/cm³	
Secant Modulus			ASTM D882
1% Secant, MD	218	MPa	
2% Secant, MD	188	MPa	
1% Secant, TD	251	MPa	
2% Secant, TD	209	MPa	
Tensile Strength			ASTM D882
MD : Yield	10.4	MPa	
TD : Yield	10.5	MPa	
MD : Break	38.5	MPa	
TD : Break	36.3	MPa	
Tensile Elongation			ASTM D882
MD : Break	450	%	
TD : Break	630	%	
Dart Drop Impact	1000	g	ASTM D1709A

Form No. TDS-56892-en
Document Created: Thursday, March 15, 2018
Added to Prospector: March 2002
Last Updated: 10/16/2017

Polyethylene Lotrène® Q1018 H

Refining & Chemicals
Polymers

Technical data sheet
Linear Low Density Polyethylene
Produced in Qatar

Description

Lotrène® Q1018 H is an ethylene-butene copolymer produced in a gas phase reactor. It is designed for delivering competitive performance in most blown film applications.

Lotrène® Q1018 H can be processed at high output rates with moderate extrusion pressure, good bubble stability and gauge control on blown film machine designed for LLDPE.

Lotrène® Q1018 H can advantageously be blended with LDPE or other PE resins used in blown film mono extrusion or coextrusion to improve film properties.

Lotrène® Q1018 H is suited for many applications in the field of consumer, industrial, food or hygiene packaging such as collation shrink, liners, Form-Fill-Seal, heavy-duty sacks, refuse sacks or other bags and non-packaging applications like agricultural films e.g. tunnel and mulching films.

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Characteristics

Property	Method	Unit	Typical value
Density (*)	ASTM D-792	g/cm³	0.918
Melt Flow Rate (190°C/2.16 kg)	ASTM D-1238	g/10 min	1.0
Melting temperature	Internal method	°C	122
Vicat softening point	ASTM D-1525 (A120)	°C	100

(*) Density as measured on base resin.

Values indicated are typical for this product. Density and MFR are properties routinely measured during "the standard quality control procedure". Other figures are generated by tests not included in the "standard quality control procedure". They are given for information only and are not intended for specification purposes.

Processing

Lotrène® Q1018 H is typically extruded at a melt temperature around 200°C.

Lotrène® Q1018 H can be blown in the following conditions on machine designed for LLDPE:
>> Extrusion temperature: 180 to 220°C
>> BUR: 2:1 to 3:1
>> Die gap: > 1.8 mm

It is recommended to maintain extrusion temperature below 240°C.

An excellent blending of Lotrène® Q1018 H with LDPE and HDPE and mLLDPE was observed.

Polyethylene

TOTAL RESEARCH & TECHNOLOGY FELUY
Zone Industrielle C
B-7181 Feluy
Belgium

Technical Information

ELITE™ 5401G
Enhanced Polyethylene Resin

Overview

ELITE™ 5401G Enhanced Polyethylene Resin is a copolymer produced via INSITE™ Technology from Dow. It offers a unique combination of low seal initiation, moderate stiffness and low blocking for excellent performance on automated packaging equipment.

- For food and specialty packaging films
- Superior impact resistance and tear properties

Complies with:

- U.S. FDA FCN 424
- Canadian HPFB No Objection
- EU, No 10/2011
  - Consult the regulations for complete details.

Additive

- Antiblock: 2500 ppm
- Slip: 1000 ppm
- Processing Aid: No

Physical	Nominal Value (English)	Nominal Value (SI)	Test Method
Density	0.918 g/cm³	0.918 g/cm³	ASTM D792
Base Density [1]	0.917 g/cm³	0.917 g/cm³	Dow Method
Melt Index (190°C/2.16 kg)	1.0 g/10 min	1.0 g/10 min	ASTM D1238
Films	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Film Thickness - Tested	1.0 mil	25 µm	
Film Puncture Energy	15.0 in·lb	1.69 J	Dow Method
Film Puncture Force	8.00 lbf	35.6 N	Dow Method
Film Puncture Resistance	110 ft·lb/in³	9.10 J/cm³	Dow Method
Film Toughness			ASTM D882
MD	850 ft·lb/in³	70.3 J/cm³	
TD	800 ft·lb/in³	66.2 J/cm³	
Secant Modulus			ASTM D882
1% Secant, MD	26000 psi	179 MPa	
2% Secant, MD	23000 psi	159 MPa	
1% Secant, TD	29000 psi	200 MPa	
2% Secant, TD	24000 psi	165 MPa	
Tensile Strength			ASTM D882
MD : Yield	1700 psi	11.7 MPa	
TD : Yield	1600 psi	11.0 MPa	
MD : Break	4900 psi	33.8 MPa	
TD : Break	4000 psi	27.6 MPa	
Tensile Elongation			ASTM D882
MD : Break	400 %	400 %	
TD : Break	450 %	450 %	
Dart Drop Impact	450 g	450 g	ASTM D1709A
Elmendorf Tear Strength			ASTM D1922
MD	250 g	250 g	
TD	550 g	550 g	
Thermal	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Vicat Softening Temperature	212 °F	100 °C	ASTM D1525
Melting Temperature (DSC)	253 °F	123 °C	Dow Method
Optical	**Nominal Value (English)**	**Nominal Value (SI)**	**Test Method**
Gloss (45°)	33	33	ASTM D2457
Haze	22 %	22 %	ASTM D1003

Form No. 400-00056893en
Rev: 2012-09-17

Technical Data Sheet

Lupolen 2426H

Low Density Polyethylene

Product Description

Lupolen 2426 H is an additivated, low density polyethylene. It contains slip and anti-blocking agent. It is characterized by a good balance between processability and mechanical properties. Films made from *Lupolen* 2426 H exhibit good optical properties. It is delivered in pellet form.

This product is not intended for use in medical and pharmaceutical applications.

Regulatory Status

For regulatory compliance information, see *Lupolen* 2426H Product Stewardship Bulletin (PSB) and Safety Data Sheet (SDS).

Status	Commercial: Active
Availability	Africa-Middle East; Asia-Pacific; Europe
Application	Bags & Pouches; Food Packaging Film; Hygiene Film; Liner Film; Shrink Film
Market	Flexible Packaging
Processing Method	Blown Film; Cast Film
Attribute	Good Heat Seal; Good Optical Properties; Good Processability; Low Friction; Unspecified Antiblocking; Unspecified Slip

Typical Properties	Nominal Value	Units	Test Method
Physical			
Melt Flow Rate, (190 °C/2.16 kg)	1.9	g/10 min	ISO 1133-1
Density	0.924	g/cm³	ISO 1183-1
Mechanical			
Tensile Modulus	260	MPa	ISO 527-1, -2
Tensile Stress at Yield	11	MPa	ISO 527-1, -2
Film			
Dart Drop Impact Strength, F50	110	g	ASTM D1709
Tensile Strength			
MD	25	MPa	ISO 527-1, -3
TD	21	MPa	ISO 527-1, -3
Tensile Strain at Break			
MD	250	%	ISO 527-1, -3
TD	600	%	ISO 527-1, -3
Coefficient of Friction	<0.2		ISO 8295
Impact			
Failure Energy	4	J/mm	DIN 53373
Thermal			
Vicat Softening Temperature, (A/50 N)	94	°C	ISO 306
Peak Melting Point	111	°C	ISO 3146
Optical			
Haze, (50 µm)	<8	%	ASTM D1003

PRODUCT DATA SHEET

LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE

Low Density Polyethylene

LF2220M

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Date of issue : March 2017

www.sasol.com

Melt Index: 2.0 g/10min

Density: 0.922 g/cm^3

Features
- Tubular Resin
- Good clarity
- Wide sealing range
- Good drawdown

Applications
- General packaging film (20µm to 50µm)
- Clarity film
- Thin film

Additives
- Antioxidant
- Medium slip
- Medium antiblock

Typical properties (not to be construed as specifications)		Value (SI)	Value (English)	Method
Resin Properties	Melt Index (190°C/2.16kg)	2.0 g/10min	2.0 g/10min	ASTM D1238
	Nominal density	0.922 g/cm^3	0.922 g/cm^3	ASTM D1505
Film Properties	Tensile strength at yield MD	10 MPa	1450 psi	ASTM D882
	Tensile strength at yield TD	9 MPa	1305 psi	ASTM D882
	Tensile strength at break MD	21 MPa	3045 psi	ASTM D882
	Tensile strength at break TD	17 MPa	2465 psi	ASTM D882
	Elongation MD	310 %	310 %	ASTM D882
	Elongation TD	550 %	550 %	ASTM D882
	Elmendorf Tear MD	8 g/µm	8 g/µm	ASTM D1922
	Elmendorf Tear TD	6 g/µm	6 g/µm	ASTM D1922
	Dart Drop Impact Strength (F_{50})	65 g	65 g	ASTM D1709A
	Haze	6.5%	6.5 %	ASTM D1003
	Clarity	48	48	ASTM D1746
	Gloss (45°)	65	65	ASTM D2457
	Coefficient of friction (static)	0.1	0.1	ASTM D1894
	Coefficient of friction (dynamic)	0.1	0.1	ASTM D1894
	Blocking	<25g	<25g	ASTM D3354

The above values were measured on a 30 µm film produced on a 65 mm Macchi extruder with a Macchi LDPE screw and a 250 mm die, using 208°C melt temperature, 625 mm FLH and a 2.5:1 BUR and a die gap of 0.8mm.

PRODUCT DATA SHEET

LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE LDPE

Low Density Polyethylene

LF2220X

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Date of issue : November 26, 2018

www.sasolnorthamerica.com

Melt Index: 2.0 g/10min

Density: 0.922 g/cm³

Features
- Tubular Resin
- Good balance of optical and mechanical properties
- Processes on both Blown and cast

Applications
- Bakery Film
- Compounding
- Foams
- Blending with LLDPE

Additives
- Antioxidant

Typical properties (not to be construed as specifications)		Value (SI)	Value (English)	Method
Resin Properties	Melt Index (190°C/2.16kg)	2.0 g/10 min	2.0 g/10 min	ASTM D1238
	Density	0.922 g/cm³	0.922 g/cm³	ASTM D1505
	Base Density (1)	0.922 g/cm³	0.922 g/cm³	Sasol Method
Film Properties	Tensile strength at yield MD	1500 psi	10 MPa	ASTM D882
	Tensile strength at yield TD	1600 psi	11 MPa	ASTM D882
	Tensile strength at break MD	4300 psi	30 MPa	ASTM D882
	Tensile strength at break TD	3300 psi	23 MPa	ASTM D882
	Elongation MD	240 %	240 %	ASTM D882
	Elongation TD	550 %	550 %	ASTM D882
	1% Secant Modulus MD	30000 psi	210 MPa	ASTM D882
	1% Secant Modulus TD	37000 psi	260 MPa	ASTM D882
	Elmendorf Tear MD	290 g	290 g	ASTM D1922
	Elmendorf Tear TD	100 g	100 g	ASTM D1922
	Dart Drop Impact Strength (F_{50})	110 g	110 g	ASTM D1709A
	Haze	6 %	6 %	ASTM D1003
	Gloss (45°)	69	69	ASTM D2457

(1) Base density is calculated assuming that the product doesn't contain any antiblock additive.

The above values were measured on a 1.5 mil (38.1 µm) film produced on a 2.5 inch (63.5 mm) blown film line with a 2.5:1 BUR using a die gap of 30 mil (0.8mm) die gap.

Product Datasheet

ExxonMobil

ExxonMobil™ LDPE LD 136.MN

Low Density Polyethylene Resin

Product Description

ExxonMobil™ LD 136.MN is a homopolymer film resin with good clarity. The resin is suitable for processing on blown film equipment.

General

Availability [1]	• Asia Pacific	• Latin America	• North America
Additive	• Antiblock: 1500 ppm	• Slip: 750 ppm	• Thermal Stabilizer: Yes
Applications	• Blend Partner • Food Packaging	• Form Fill And Seal Packaging • Produce Bags	• Textile Packaging
Form(s)	• Pellets		
Revision Date	• 04/01/2018		

Resin Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Density	0.921 g/cm³	0.921 g/cm³	ASTM D1505
Melt Index (190°C/2.16 kg)	2.0 g/10 min	2.0 g/10 min	ASTM D1238
Peak Melting Temperature	228 °F	109 °C	ExxonMobil Method

Thermal	Typical Value (English)	Typical Value (SI)	Test Based On
Vicat Softening Temperature	194 °F	90 °C	ASTM D1525

Film Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Tensile Strength at Yield MD	1500 psi	10 MPa	ASTM D882
Tensile Strength at Yield TD	1600 psi	11 MPa	ASTM D882
Tensile Strength at Break MD	3600 psi	25 MPa	ASTM D882
Tensile Strength at Break TD	2700 psi	19 MPa	ASTM D882
Elongation at Break MD	130 %	130 %	ASTM D882
Elongation at Break TD	490 %	490 %	ASTM D882
Secant Modulus MD - 1% Secant	30000 psi	210 MPa	ASTM D882
Secant Modulus TD - 1% Secant	37000 psi	260 MPa	ASTM D882
Dart Drop Impact	120 g	120 g	ASTM D1709A
Elmendorf Tear Strength MD	440 g	440 g	ASTM D1922
Elmendorf Tear Strength TD	110 g	110 g	ASTM D1922
Puncture Force	6 lbf	28 N	ExxonMobil Method
Puncture Energy	3.0 in·lb	0.34 J	ExxonMobil Method

Optical Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Gloss (45°)	68	68	ASTM D2457
Haze	6.1 %	6.1 %	ASTM D1003

Legal Statement

Contact your ExxonMobil Chemical Customer Service Representative for potential food contact application compliance (e.g. FDA, EU, HPFB).

This product is not intended for use in medical applications and should not be used in any such applications.

Processing Statement

Film (1.5 mil/38.1 micron) made from LD 136.MN resin on a 2.5 inch (63.5 mm) blown film line with a 2.5:1 blow-up ratio, a melt temperature of 340-360°F (171-182°C), a 30 mil (0.76 mm) die gap at a rate of 8 lbs/hr/in die circumference (1.43 kg/hr/cm).

Notes

Typical properties: these are not to be construed as specifications.

[1] Product may not be available in one or more countries in the identified Availability regions. Please contact your Sales Representative for complete Country Availability.

ExxonMobil

ExxonMobil™ LDPE LD 136.MN
Low Density Polyethylene Resin

For additional technical, sales and order assistance: www.exxonmobilchemical.com/ContactUs

exxonmobilchemical.com

SABIC® LDPE HP2023JN

LOW DENSITY POLYETHYLENE

DESCRIPTION

HP2023JN is a Low Density Polyethylene grade suitable for general-purpose packaging. They exhibit better draw down, good optical and mechanical properties. HP2023JN contains slip and antiblock additives.

TYPICAL APPLICATIONS

Thin shrink film, lamination film, produce bags, textile packaging, soft goods packaging, general-purpose bags with good optics and t-shirts carrier bags.

TYPICAL PROPERTY VALUES

Revision 20190205

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
POLYMER PROPERTIES			
Melt Flow Rate			
at 190°C and 2.16 kg	2.0	g/10 min	ASTM D1238
Density			
at 23°C	923	kg/m³	ASTM D1505
FORMULATION			
Slip agent	☑	.	.
Anti block agent	☑	.	.
MECHANICAL PROPERTIES			
Dart Impact Strength (1)	2	g/µm	ASTM D1709
OPTICAL PROPERTIES (1)			
Haze	8	%	ASTM D1003
Gloss			
at 45°	61	-	ASTM D2457
FILM PROPERTIES (1)			
Tensile Properties			
stress at break, MD	20	MPa	ASTM D882
stress at break, TD	15	MPa	ASTM D882
strain at break, MD	300	%	ASTM D882
strain at break, TD	588	%	ASTM D882
stress at yield, MD	12	MPa	ASTM D882
stress at yield, TD	12	MPa	ASTM D882
1% secant modulus, MD	235	MPa	ASTM D882
1% secant modulus, TD	271	MPa	ASTM D882
Tear Resistance			
MD	15	g/µm	ASTM D1922
TD	11	g/µm	ASTM D1922
THERMAL PROPERTIES			
Vicat Softening Temperature	92	°C	ASTM D1525

(1) Properties have been measured by producing 30 µm film with 2.5 BUR using 100% HP2023JN.

PROCESSING CONDITIONS

Typical processing conditions for HP2023JN are:

Barrel temperature: 160 - 190°C

Blow up ratio: 2.0 - 3.0

HEALTH, SAFETY AND FOOD CONTACT REGULATIONS

Detailed information is provided in the relevant Material Safety Datasheet and or Standard Food Declaration, Additional specific information can be requested via your local Sales Office.

DISCLAIMER: This product is not intended for and must not be used in any pharmaceutical/medical applications.

STORAGE AND HANDLING

Polyethylene resin should be stored in a manner to prevent a direct exposure to sunlight and/or heat. The storage area should also be dry and preferably do not exceed 50°C. SABIC would not give warranty to bad storage conditions which may lead to quality deterioration such as color change. bad smell and inadequate product performance. It is advisable to process PE resin within 6 months after delivery.

DISCLAIMER

Product Datasheet

ExxonMobil

ExxonMobil™ LDPE LD 100.BW

Low Density Polyethylene Resin

Product Description

LD 100.BW is a LDPE grade, offering a good balance of optical and mechanical properties.

General

Availability [1]	▪ Latin America	▪ North America	
Additive	▪ Antiblock: No	▪ Slip: No	▪ Thermal Stabilizer: Yes
Applications	▪ Blend Partner ▪ Cast Film ▪ Compounding ▪ Foams ▪ Form Fill And Seal Packaging	▪ Freezer Film ▪ Lamination Film ▪ Light Duty Shrink Film ▪ Liners ▪ Mail Bag	▪ Produce Bags ▪ Shoppers ▪ Textile Packaging ▪ Tough Medium Sized Molding
Revision Date	▪ 04/01/2018		

Resin Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Density	0.923 g/cm³	0.923 g/cm³	ASTM D1505
Melt Index (190°C/2.16 kg)	2.0 g/10 min	2.0 g/10 min	ASTM D1238
Peak Melting Temperature	228 °F	109 °C	ExxonMobil Method

Thermal	Typical Value (English)	Typical Value (SI)	Test Based On
Vicat Softening Temperature	196 °F	91 °C	ASTM D1525

Film Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Tensile Strength at Yield MD	1500 psi	10 MPa	ASTM D882
Tensile Strength at Yield TD	1600 psi	11 MPa	ASTM D882
Tensile Strength at Break MD	4300 psi	30 MPa	ASTM D882
Tensile Strength at Break TD	3300 psi	23 MPa	ASTM D882
Elongation at Break MD	240 %	240 %	ASTM D882
Elongation at Break TD	550 %	550 %	ASTM D882
Secant Modulus MD - 1% Secant	30000 psi	200 MPa	ASTM D882
Secant Modulus TD - 1% Secant	37000 psi	260 MPa	ASTM D882
Dart Drop Impact	110 g	110 g	ASTM D1709A
Elmendorf Tear Strength MD	290 g	290 g	ASTM D1922
Elmendorf Tear Strength TD	100 g	100 g	ASTM D1922
Puncture Force	11 lbf	48 N	ExxonMobil Method
Puncture Energy	12 in·lb	1.3 J	ExxonMobil Method

Optical Properties	Typical Value (English)	Typical Value (SI)	Test Based On
Gloss (45°)	69	69	ASTM D2457
Haze	5.6 %	5.6 %	ASTM D1003

Legal Statement

Contact your ExxonMobil Chemical Customer Service Representative for potential food contact application compliance (e.g. FDA, EU, HPFB).

This product is not intended for use in medical applications and should not be used in any such applications.

Processing Statement

Film (1.5 mil/38.1 micron) made from LD 100.BW resins on a 2.5 inch (63.5 mm) blown film line with a 2.5:1 blow-up ratio, a melt temperature of 340-360°F (171-182°C), a 30 mil (0.76 mm) die gap at a rate of 8 lbs/hr/in die circumference (1.43 kg/hr/cm).

Notes

Typical properties: these are not to be construed as specifications.

[1] Product may not be available in one or more countries in the identified Availability regions. Please contact your Sales Representative for complete Country Availability.

CIPLAS by ITOCHU
750 Town & Country Blvd. Suite 600, Houston, TX 77024
Phone: +1 (281) 762-4130

Low Density Polyethylene

L2121F

PRODUCT DESCRIPTION

LDPE resin with good clarity

APPLICATIONS

Product used for general purpose packaging, including produce bags, food packaging, and textile packaging.

TYPICAL PROPERTIES

Properties		Typical Value	Unit	Test Method
Melt Flow Index (190°C/2.16 kg)		2.0 - 2.1	g/10 min	ASTM D1238
Density		0.921 - 0.923	g/cm^3	ASTM D1505
Tensile Strength at Break	MD	3,450 - 3,550	psi	ASTM D882
	TD	2,650 - 2,750		
Elongation at Break	MD	340 - 360	%	ASTM D882
	TD	690 - 710		
Haze		4.2	%	ASTM D1003
Gloss MD, 45°		76.0		ASTM D2457
Dart Drop Impact Strength, F50		95 - 105	g/mil	ASTM D1709A

ADDITIVE

Antiblock	1500 PPM
Slip	750 PPM
Other	NONE

Lotrène FD0270

LOW DENSITY POLYETHYLENE

Low Density Polyethylene

DESCRIPTION

Lotrène® FD0270 is an additive free grade mainly recommended for the extrusion of thin film for light and medium duty applications.

PROPERTIES

The molecular structure of Lotrène® FD0270 makes it possible to produce very thin, clear and glossy films.

POLYMER PROPERTIES	VALUE	UNIT	TEST METHOD
Melt Flow Index	2.4	g/10 min.	ASTM D-1238
Density @ 23 °C	0.923	g/cm3	ASTM D-792
Crystalline Melting Point	112	°C	ASTM E-794
Vicat Softening Point	96	°C	ASTM D-1525

FILM PROPERTIES	VALUE	UNIT	TEST METHOD
Tensile Strength @ Yield MD/ TD	12/12	MPa	ASTM D-882
Tensile Strength @ Break MD/ TD	28/24	MPa	ASTM D-882
Elongation @ Break MD/ TD	430/660	%	ASTM D-882
Tear resistance MD/ TD	90/70	N/mm	ASTM D- 1922
Puncture Force	50	N	Internal Method
Impact Strength, F 50	85	g	ASTM D-1709
Coefficient Of friction	1.2		ASTM D-1894
Haze	5.5	%	ASTM D-1003
Gloss (@ 45 °)	73		ASTM D-2457

(Film properties stated above have been obtained using 40 µm blown films laboratory test specimens produced under following conditions: 45 mm screw with L/D = 30, die diameter 120 mm, die gap 1.56 mm, BUR 2.5:1).

PROCESSING

Lotrène® FD0270 can be easily processed on all types of extruders to make blown or cast films.
The melt temperature is suggested to be in the range of 140-150 °C.
The best properties of the blown film are achieved at blow up ratios between 2:1 and 3:1.

The recommended thickness range is from 20 µm to 100 µm

Lotrène LA0710

LOW DENSITY POLYETHYLENE

Low Density Polyethylene

DESCRIPTION

Lotrène® LA0710 is mainly recommended for the extrusion coating at high speed. It contains no additive.

PROPERTIES

The structure of Lotrène® LA0710 allows it to be used for thin gauge coating at very high speeds onto various substrates.

Lotrène® LA0710 has good mechanical properties, low neck-in and excellent heat sealability. It exhibits also a good adhesion to both porous and non-porous substrates.

POLYMER PROPERTIES	VALUE	UNIT	TEST METHOD
Melt Flow Index	8.0	g/10 min.	ASTM D-1238
Density @ 23 °C	0.918	g/cm3	ASTM D-1505
Crystalline Melting Point	105	°C	ASTM E-794
Vicat Softening Point	87	°C	ASTM D-1525

COATING PROPERTIES	VALUE	UNIT	TEST METHOD
Minimal coating weight	6	g/m2	Internal
Neck-in	10	%	Internal

(Coating condition: Extruder: 32 L/D, Screw diameter: 75 mm, Screw speed: 50 rpm, Die gap: 0.7 mm, Die width: 500 mm, Air gap: 145 mm, Melt temperature 320 deg C.)

PROCESSING

Lotrène® LA0710 can be easily processed on all standard extrusion coating machines. However, in order to obtain the best uniform thickness and width, it is advisable to use an extruder with an L/D ratio at least 20:1, the melt temperature is suggested to be in the range of 280-330 °C.

The output depends on the nature of the substrate, the thickness of the coating and the temperature of the material.

APPLICATIONS

Coating and /or Lamination of:

- Paper
- Paper board
- Aluminum
- Cellophane film
- Photographic paper
- Polymer film
- Tarpaulin
- Paper / Aluminum
- PE Film / Aluminum

RELENE POLYETHYLENE

Reliance POLYMERS

Provisional

J24FS040
J24FA040

LOW DENSITY POLYETHYLENE
FOR GENERAL PURPOSE FILM APPLICATIONS

These are blown film grades and can be extruded with considerable ease. J24FS040 has been blended with necessary additives during manufacture to obtain good surface slip and easy open-ability between two layers of the film.

J24FS040- with Slip additive.

J24FA040- without Slip additive

TYPICAL CHARACTERISTICS*

PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE**
Density (23°C)	ASTM D 792	g/cc	0.922
Melt Flow Index (190oC / 2.16 Kg)	ASTM D 1238	g/10 min.	4.0
Tensile Strength at Break (MD/TD)	ASTM D 882	MPa	18/16
Elongation at Break (MD/TD)	ASTM D 882	%	250/400
Dart Impact Strength (F_{50})	ASTM D 1709/A	g/mic.	2.0

* Typical characteristics and not to be taken as specifications
** Typical properties measured on 40 µm film made with 1.8 mm die gap & 2.5 BUR.

APPLICATIONS:

High slip grade for shopping bags, general purpose packaging. Non Slip grade can be used for Lamination and bubble wrap applications.

Regulatory Information

For various regulatory and food contact certifications / declarations please contact RIL representative.

Storage Recommendations

- Bags should be stored in dry/closed conditions at temperatures below 50°C and protected from UV / direct sunlight.

Reliance Industries Limited, Product Application & Research Center (PARC)
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April 2017

LDPE Resin For Extrusion Coating

EL-Lene™ LDPE resin has superior processability at wide range of mechanical speed.

Grade	D477C	D777C	D311C	D388C
MFR @190°C, 2.16 kg (g/10 min) ASTM D1238	4.0	7.0	7.0	8.0
Density (g/cm^3) ASTM D1505	0.924	0.920	0.917	0.919
Melting Temperature (°C) ASTM D2117	112	107	104	107
Neck-in 315°C (cm) SCG method	6.0	5.0	4.0	15.0
Organoleptic SCG method	Good	Good	Excellent	Good
Key Characteristic	- High stiffness - High scratch resistance - Good neck-in and edge stability	- Good processability with low neck-in - Good organoleptic	- Excellent neck-in and edge stability - Outstanding organoleptic	- Excellent process-ability at high speed machine - Good organoleptic
Recommended Application	- Sachet - Pouch - Aseptic box - Woven - Paper & tarpaulin	- Sachet - Pouch - Aseptic box - Woven - Paper & tarpaulin	- Sachet - Pouch - Aseptic box - Woven - Paper & tarpaulin	- Sachet - Pouch - Aseptic box
International Standard Compliances	- U.S FDA 21 CFR 177.1520 - Regulation (EU) No.10/2011 - Regulation (EC) 2023/2006 (GMP) - Packaging and Packaging Waste Directive 94/62/EC - RoHS: Directive 2011/65/EU - Consult the regulations for complete details			

Remarks: Coating properties obtained from laboratory coating line at SCG, Melt temperature 315 °C, Cooling water temperature 25 °C

QAPCO
QATAR PETROCHEMICAL COMPANY

Lotrène LA0710

LOW DENSITY POLYETHYLENE

Low Density Polyethylene

DESCRIPTION

Lotrène® LA0710 is mainly recommended for the extrusion coating at high speed. It contains no additive.

PROPERTIES

The structure of Lotrène® LA0710 allows it to be used for thin gauge coating at very high speeds onto various substrates.

Lotrène® LA0710 has good mechanical properties, low neck-in and excellent heat sealability. It exhibits also a good adhesion to both porous and non-porous substrates.

POLYMER PROPERTIES	VALUE	UNIT	TEST METHOD
Melt Flow Index	8.0	g/10 min.	ASTM D-1238
Density @ 23 °C	0.918	g/cm3	ASTM D-1505
Crystalline Melting Point	105	°C	ASTM E-794
Vicat Softening Point	87	°C	ASTM D-1525

COATING PROPERTIES	VALUE	UNIT	TEST METHOD
Minimal coating weight	6	g/m2	Internal
Neck-in	10	%	Internal

(Coating condition: Extruder: 32 L/D, Screw diameter: 75 mm, Screw speed: 50 rpm, Die gap: 0.7 mm, Die width: 500 mm, Air gap: 145 mm, Melt temperature 320 deg C.)

PROCESSING

Lotrène® LA0710 can be easily processed on all standard extrusion coating machines. However, in order to obtain the best uniform thickness and width, it is advisable to use an extruder with an L/D ratio at least 20:1, the melt temperature is suggested to be in the range of 280-330 °C.

The output depends on the nature of the substrate, the thickness of the coating and the temperature of the material.

APPLICATIONS

Coating and /or Lamination of:

- Paper
- Paper board
- Aluminum
- Cellophane film
- Photographic paper
- Polymer film
- Tarpaulin
- Paper / Aluminum
- PE Film / Aluminum

Technical Information

DOW™ LDPE 780E
Low Density Polyethylene Resin

Overview

LDPE 780E Low Density Polyethylene Resin can be readily processed using conventional injection moulding techniques utilising melt temperatures between 140 and 250°C, a mould temperature between 10 and 50°C, and injection pressure between 50 and 150 MPa.

When properly injection moulded, 780E Low Density Polyethylene Resin exhibit:

- Excellent flow
- Good rigidity
- Good surface gloss

Note: LDPE 780E Low Density Polyethylene Resin should comply with FDA regulation 177.1520 and with most European food contact regulations when used unmodified and processed according to good manufacturing practices for contact applications. Please, contact your nearest Dow office for food contact compliance statements.The purchaser remains responsible for determining whether the use complies with all relevant regulations.

Applications:

- Housewares.
- Toys & leisures.
- Containers.
- Compounding.

Complies with Canadian HPFB No Objection
Complies with U.S. FDA 21 CFR 177.1520

Physical	Nominal Value (English)		Nominal Value (SI)		Test Method
Density	0.923	g/cm³	0.923	g/cm³	ASTM D792
Melt Index (190°C/2.16 kg)	20	g/10 min	20	g/10 min	ISO 1133
Spiral Flow					Dow Method
-- [1]	1.93	in	4.90	cm	
-- [2]	3.35	in	8.50	cm	
Molding Shrinkage					ASTM D955
Flow	0.023	in/in	2.3	%	
Across Flow	0.015	in/in	1.5	%	
Environmental Stress-Cracking Resistance (ESCR)					ASTM D1693
Compression Molded	1.40	hr	1.40	hr	
Mechanical	**Nominal Value (English)**		**Nominal Value (SI)**		**Test Method**
Tensile Modulus - 2% Secant (Compression Molded)	23800	psi	164	MPa	ISO 527-2
Tensile Stress					ISO 527-2
Yield, Compression Molded	1190	psi	8.20	MPa	
Break, Compression Molded	1520	psi	10.5	MPa	
Tensile Strain (Break, Compression Molded)	50	%	50	%	ISO 527-2
Films	**Nominal Value (English)**		**Nominal Value (SI)**		**Test Method**
Tensile Elongation					ASTM D882
MD : Break, 7.9 mil (200 µm)	700	%	700	%	
TD : Break, 7.9 mil (200 µm)	750	%	750	%	
Impact	**Nominal Value (English)**		**Nominal Value (SI)**		**Test Method**
Tensile Impact Strength	136	ft·lb/in²	286	kJ/m²	ISO 8256
Hardness	**Nominal Value (English)**		**Nominal Value (SI)**		**Test Method**
Shore Hardness (Shore D)	49		49		ISO 868

Form No. 400-00084240en
Rev: 2016-09-12