

# Lotrène Q1018 Series

LINEAR LOW DENSITY POLYETHYLENE

## Linear Low Density Polyethylene (LLDPE)

### DESCRIPTION AND USE

Lotrène Q1018 Series are Linear Low Density Polyethylene resins produced in a gas phase reactor using butene (C4) co-monomer.

They are designed for blown film applications and can be used in pure form as well as blended with other PE resins, such as LDPE or HDPE and mPE resins for mono extrusion or co-extrusion process to modify film properties. Lotrène® Q1018 Series are suited for many applications in the field of consumer, agricultural, industrial, food or hygiene packaging, for example: collation shrink, liners, FFS bags, heavy duty sacks, refuse, tunnel films, mulching films...

### ADDITIVE PACKAGE

| PRODUCT | SLIP (ERUCAMIDE) (PPM) | ANTIBLOCK (PPM) | THERMAL STABILIZERS |
|---------|------------------------|-----------------|---------------------|
| Q1018N  | no                     | no              | Yes (blown film)    |
| Q1018H  | 1500                   | 3200            | Yes (blown film)    |

Values indicated are target values. Actual values might differ from batch to batch.

### PROPERTIES

| POLYMER PROPERTIES                | VALUE | UNIT      | TEST METHOD        |
|-----------------------------------|-------|-----------|--------------------|
| Density* @ 23 °C                  | 0.918 | g/cm3     | ASTM D-792         |
| Melt Flow Index (190 °C /2.16 kg) | 1.0   | g/10 min. | ASTM D-1238        |
| Crystalline Melting Point         | 122   | °C        | Internal           |
| Vicat Softening Point             | 100   | °C        | ASTM D-1525 (A120) |

(\* Density of base resin)

| FILM PROPERTIES                 | VALUE (*)         | UNIT      | TEST METHOD  |
|---------------------------------|-------------------|-----------|--------------|
| Tensile Strength @ Yield MD/ TD | 11/11             | MPa       | ASTM D-882   |
| Tensile Strength @ Break MD/ TD | 38/33             | MPa       | ASTM D-882   |
| Elongation @ Break MD/ TD       | 800/850           | %         | ASTM D-882   |
| Secant modulus @ 1% MD/ TD      | 215/245           | MPa       | ASTM D-882   |
| Impact Strength, F 50           | 150               | g         | ASTM D-1709  |
| Tear resistance MD/ TD          | 280/480<br>70/120 | g<br>N/mm | ASTM D- 1922 |
| Haze                            | 11                | %         | ASTM D-1003  |
| Gloss (@ 45 °)                  | 60                | -         | ASTM D-2457  |

(The above properties are measured on a blown film under following parameters:

Screw 45 mm, L/D 30, die gap 2.2 mm, output 30 kg/hr, mass temperature 210°C, thickness 40 µm and BUR 2.5:1)

## PROCESSING

**Extrusion temperatures:** 180-220 °C

**Melt temperature** 200 °C

**Blow-up ratio:** 2:1 to 3:1

**Die gap:** > 1.8 mm

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

Lotrène Q1018 Series can be blended with LDPE and other PE resins in order to improve film properties or process ability on conventional mono or co extrusion machines.

## 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 Qatofin Company Ltd (Qatofin) comply with US, EU and other food contact legislations. Limitations may apply.

All Qatofin 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. Qatofin 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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# Lotrène Q2018 Series

LINEAR LOW DENSITY POLYETHYLENE

## Linear Low Density Polyethylene (LLDPE)

### DESCRIPTION AND USE

Lotrène® Q2018 Series are Linear Low Density Polyethylene resins produced in a gas phase reactor using butene (C4) co-monomer.

They are designed for blown film applications and can be used in pure form as well as blended with other PE resins, such as LDPE or HDPE and mPE resins for mono extrusion or co-extrusion process to modify film properties. Lotrène® Q2018 Series are suited for many applications in the field of consumer, industrial, food or hygiene packaging such as freezer film, bread bags, shoppers and bags as well as lamination film and multilayer packaging film.

### ADDITIVE PACKAGE

| Product | Slip (Erucamide) (ppm) | Antiblock (ppm) | Thermal Stabilizers |
|---------|------------------------|-----------------|---------------------|
| Q2018N  | no                     | no              | Yes (blown film)    |
| Q2018H  | 1500                   | 3200            | Yes (blown film)    |
| Q2018C  | no                     | no              | Yes (cast film)     |

Values indicated are target values. Actual values might differ from batch to batch.

### PROPERTIES

| POLYMER PROPERTIES                | VALUE | UNIT              | TEST METHOD        |
|-----------------------------------|-------|-------------------|--------------------|
| Density*                          | 0.918 | g/cm <sup>3</sup> | ASTM D-792         |
| Melt Flow Index (190 °C /2.16 kg) | 2.0   | g/10 min.         | ASTM D-1238        |
| Crystalline Melting Point         | 121   | °C                | Internal           |
| Vicat Softening Point             | 100   | °C                | ASTM D-1525 (A120) |

(\* Density of base resin)

| FILM PROPERTIES                 | VALUE (*)         | UNIT      | TEST METHOD  |
|---------------------------------|-------------------|-----------|--------------|
| Tensile Strength @ Yield MD/ TD | 11/11             | MPa       | ASTM D-882   |
| Tensile Strength @ Break MD/ TD | 35/32             | MPa       | ASTM D-882   |
| Elongation @ Break MD/ TD       | 850/900           | %         | ASTM D-882   |
| Secant modulus @ 1% MD/ TD      | 215/245           | MPa       | ASTM D-882   |
| Impact Strength, F 50           | 130               | g         | ASTM D-1709  |
| Tear resistance MD/ TD          | 220/420<br>55/105 | g<br>N/mm | ASTM D- 1922 |
| Haze                            | 14                | %         | ASTM D-1003  |
| Gloss (@ 45 °)                  | 55                | -         | ASTM D-2457  |

(The above properties are measured on a blown film under following parameters:  
Screw 45 mm, L/D 30, die gap 2.2 mm, output 30 kg/hr, mass temperature 210°C, thickness 40 µm and BUR 2.5:1)

## Processing:

**Extrusion temperatures:** 170-210 °C

**Melt temperature** 190 °C

**Blow-up ratio:** 2:1 to 3:1

**Die gap:** > 1.8 mm

Lotrène® Q2018 Series can be processed at high output rates with moderate extrusion pressure, good bubble stability and gauge control on blown film lines designed for LLDPE.

Q2018 Series can be blended with LDPE and other PE resins in order to improve film properties or processability on conventional mono or co extrusion machines.

## 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

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# Lotrène Q2018C

LINEAR LOW DENSITY POLYETHYLENE

## Linear Low Density Polyethylene (LLDPE)

### DESCRIPTION AND USE

Lotrène® Q2018C is a Linear Low Density Polyethylene resin produced in a gas phase reactor using butene (C4) co-monomer.

Lotrène® Q2018C can be processed at optimal output rates with moderate extrusion pressure, good web stability and gauge control on cast film machines designed for LLDPE. Lotrène® Q2018C can advantageously be blended with LDPE or other PE resins used in cast film mono extrusion or co-extrusion to improve film properties.

Lotrène® Q2018C is for melt index 2.0 cast stretch film market. It is suited for many applications in the field of consumer, industrial, food or hygiene packaging as well as non-packaging applications like agricultural films e.g. mulching films.

### ADDITIVE PACKAGE

| Product | Slip (Erucamide) | Antiblock | Processing aid | Thermal Stabilizers |
|---------|------------------|-----------|----------------|---------------------|
| Q2018C  | no               | no        | no             | Yes (cast film)     |

### CHARACTERISTICS

| Property                       | Method             | Unit              | Value |
|--------------------------------|--------------------|-------------------|-------|
| Density (*)                    | ASTM D-792         | g/cm <sup>3</sup> | 0.918 |
| Melt Flow Rate (190°C/2.16 kg) | ASTM D-1238        | g/10 min          | 2.0   |
| Melting temperature            | Internal           | °C                | 121   |
| Vicat temperature              | ASTM D-1525 (A120) | °C                | 100   |

(\* density of base resin)

### CAST FILM PROPERTIES

| Properties                      | Method      | Unit | Value (*) |
|---------------------------------|-------------|------|-----------|
| Tensile Strength at Yield MD/TD | ASTM D-882  | MPa  | 9.7 / 9.6 |
| Tensile Strength at Break MD/TD | ASTM D-882  | MPa  | 37 / 23   |
| Elongation at Break MD/TD       | ASTM D-882  | %    | 330 / 670 |
| Elmendorf tear resistance MD/TD | ASTM D-1922 | N/mm | 12 / 193  |
| Secant modulus at 1% MD/TD      | ASTM D-882  | MPa  | 165 / 170 |
| Dart test, F50                  | ASTM D-1709 | g    | 35        |
| Puncture force                  | ASTM D5748  | N    | 25        |
| Puncture energy                 | ASTM D5748  | J    | 1.6       |
| Haze                            | ASTM D-1003 | %    | 1.8       |
| Gloss @ 45°                     | ASTM D2457  |      | 92        |

The above properties are measured 20 µm films produced on a cast film line under the following parameters: 30 mm screw, L/D = 30:1, die length = 600 mm, die gap = 0.8 mm, line speed = 50 m/min, temperature setting = 180-230°C. Melt temperature 250°C. Chill roll temperature: 25°C.

## Processing

Lotrène® Q2018C is typically extruded at a melt temperatures between 220 and 250°C.

Lotrène® Q2018C can be cast in the following conditions on machine designed for LLDPE:

- Extrusion temperature: 180 to 270°C
- Line speed: > 400 m/min
- Die gap: > 0.8 mm

An excellent blending ability of LOTRÈNE Q2018C with LDPE and HDPE and mLLDPE was observed.

## HANDLING & STORAGE

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## SAFETY

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