

# TECHNICAL DATASHEET

## LLDPE 218 Series



### PRODUCT DESCRIPTION

218B is a butene Linear Low Density Polyethylene grade designed to provide easy processing and specially formulated for optimum thermal stability at high processing temperatures used during production of Cast films. Films produced using this resin gives excellent optical properties, good puncture resistance and tear strength.

### APPLICATION

Cling film, stretch films for manual and pellet wrap, melt embossed films and other general-purpose applications.

| GRADE | SLIP (PPM) | ANTIBLOCK (PPM) |
|-------|------------|-----------------|
| 218N  | None       | None            |
| 218W  | 1500       | 3500            |

### TECHNICAL DATA

| RESIN PROPERTIES                           | UNIT              | VALUE <sup>(1)</sup> | ASTM METHOD  |
|--|-------------------|----------------------|--------------|
| Melt Flow Rate @ 190°C & 2.16 Kg load      | g/10 min.         | 2                    | D 1238       |
| Density                                    | Kg/m <sup>3</sup> | 918                  | D 1505       |
| <b>MECHANICAL PROPERTIES<sup>(2)</sup></b> |                   |                      |              |
| Tensile Strength @ break, MD               | MPa               | 35                   | D 882        |
| TD   |                   | 29                   |              |
| Tensile Elongation @ break, MD             | %                 | 700                  | D 882        |
| TD   |                   | 750                  |              |
| Tensile Strength @ yield, MD               | MPa               | 12                   | D 882        |
| TD   |                   | 10                   |              |
| 1% Secant Modulus, MD                      | MPa               | 220                  | D 882        |
| TD   |                   | 260                  |              |
| Puncture Resistance                        | J/mm.             | 63                   | SABIC Method |
| Dart Impact Strength                       | g                 | 85                   | D 1709       |
| Elmendorf Tear Strength, MD                | g                 | 130                  | D 1922       |
| TD   |                   | 320                  |              |

# TECHNICAL DATASHEET

## LLDPE M500026

### PRODUCT DESCRIPTION

M500026 is Linear Low Density Polyethylene grade with narrow molecular weight distribution suitable for injection molding applications. It has been designed to give excellent flow properties with better low temperature toughness, stress crack resistance and gloss

### APPLICATION

M500026 is recommended for lids for closures and containers and deep draw houseware products, automotive parts etc.

### TECHNICAL DATA

| Properties                                       | Unit              | Value <sup>(1)</sup> | ASTM Method |
|--|-------------------|----------------------|-------------|
| <b>Resin Properties</b>                          |                   |                      |             |
| Melt Flow Rate @ 190°C & 2.16 kg load            | g/10 min.         | 50                   | D 1238      |
| Density @ 23°C                                   | kg/m <sup>3</sup> | 926                  | D 1505      |
| <b>Mechanical Properties<sup>(2)</sup></b>       |                   |                      |             |
| 1% Secant Modulus                                | MPa               | 240                  | D 638       |
| Tensile Strength @ Yield                         | MPa               | 10                   | D 638       |
| Tensile Strength @ Break                         | MPa               | 8                    | D 638       |
| Tensile Elongation @ Break                       | %                 | >350                 | D638        |
| Flexural Strength                                | MPa               | 8                    | D 790       |
| Flexural Modulus                                 | MPa               | 200                  | D 790       |
| Izod Impact                                      | J/m               | 500                  | D 256       |
| Hardness (Shore D)                               | -                 | 50                   | D 2240      |
| ESCR (100% Igepal), F <sub>50</sub> <sup>*</sup> | Hrs               | 6                    | D 1693B     |
| ESCR (10% Igepal), F <sub>50</sub>               | Hrs               | 3                    |             |
| <b>Thermal Properties</b>                        |                   |                      |             |
| Vicat Softening Point                            | °C                | 88                   | D 1525      |
| Brittleness Temperature                          | °C                | < -75                | D 746       |

# TECHNICAL DATASHEET

## M200024

### PRODUCT DESCRIPTION

LLDPE M200024 is a linear low density polyethylene copolymer injection molding grade with a narrow molecular weight distribution. It has been typically designed to have good low temperature toughness, stress crack resistance (ESCR) and gloss.

### APPLICATION

LLDPE M200024 is typically used for injection molding of large items where high flow and fast cycles are required such as housewares, trash cans, automotive parts, lids and large industrial containers. This product is not intended for and must not be used in any pharmaceutical/medical applications.

### TECHNICAL DATA

| PROPERTIES                               | TYPICAL VALUES | UNITS             | TEST METHODS |
|--|----------------|-------------------|--------------|
| <b>POLYMER PROPERTIES</b>                |                |                   |              |
| <b>Melt Flow Rate</b>                    |                |                   |              |
| at 190°C and 2.16 kg                     | 20             | g/10 min          | ASTM D1238   |
| <b>Density <sup>(1)</sup></b>            | 924            | kg/m <sup>3</sup> | ASTM D1505   |
| <b>MECHANICAL PROPERTIES</b>             |                |                   |              |
| <b>Flexural properties</b>               |                |                   |              |
| flexural strength                        | 9              | MPa               | ASTM D790    |
| flexural modulus                         | 200            | MPa               | ASTM D790    |
| <b>Izod Impact Strength</b>              | 500            | J/m               | ASTM D256    |
| <b>Hardness (Shore D)</b>                | 50             | -                 | ASTM D2240   |
| <b>ESCR <sup>(2)</sup></b>               |                |                   |              |
| 100% Igepal, F50                         | 6              | hrs               | ASTM D1693B  |
| 10% Igepal, F50                          | 3              | hrs               | ASTM D1693B  |
| <b>FILM PROPERTIES</b>                   |                |                   |              |
| <b>Tensile Properties <sup>(3)</sup></b> |                |                   |              |
| 1% secant modulus                        | 230            | MPa               | ASTM D638    |
| stress at yield                          | 10             | MPa               | ASTM D638    |
| stress at break                          | 12             | MPa               | ASTM D638    |
| strain at break                          | >500           | %                 | ASTM D638    |
| <b>THERMAL PROPERTIES</b>                |                |                   |              |
| <b>Vicat Softening Point</b>             | 92             | °C                | ASTM D1525   |

# TECHNICAL DATASHEET

## LLDPE 318B

### PRODUCT DESCRIPTION

318B is Linear Low Density Polyethylene grade designed to provide easy processability and specially formulated for optimum thermal stability at high processing temperatures used during production of Cast films. Films produced using this resin gives excellent optical properties, good puncture resistance and tear strength.

### APPLICATION

Cling film, stretch films for manual and pellet wrap, melt embossed films and other general-purpose applications.

### TECHNICAL DATA

| Properties                                 | Unit              | Value <sup>(1)</sup> | ASTM Method |
|--|-------------------|----------------------|-------------|
| <b>Resin Properties</b>                    |                   |                      |             |
| Melt Flow Rate @ 190°C & 2.16 kg load      | g/10 min.         | 2.8                  | D 1238      |
| Density @ 23°C                             | kg/m <sup>3</sup> | 918                  | D 1505      |
| <b>Mechanical Properties<sup>(2)</sup></b> |                   |                      |             |
| Tensile Strength @ break, MD               | MPa               | 28                   | D 882       |
| TD   |                   | 18                   |             |
| Tensile Elongation @ break, MD             | %                 | 470                  | D 882       |
| TD   |                   | 600                  |             |
| Tensile Strength @ yield, MD               | MPa               | 13                   | D 882       |
| TD   |                   | 10                   |             |
| 1% Secant Modulus, MD                      | MPa               | 135                  | D 882       |
| TD   |                   | 140                  |             |
| Puncture Resistance                        | J/mm              | 57                   |             |
| Dart Impact Strength                       | g                 | 75                   | D 1709      |
| Elmendorf Tear Strength, MD                | g                 | 65                   | D 1922      |
| TD   |                   | 300                  |             |
| <b>Optical Properties<sup>(2)</sup></b>    |                   |                      |             |
| Haze                                       | %                 | 5                    | D 1003      |
| Gloss @ 60°                                | -                 | 90                   | D 2457      |
| <b>Thermal Properties</b>                  |                   |                      |             |
| Vicat Softening Point                      | °C                | 98                   | D 1525      |

# TECHNICAL DATASHEET

## R50035

### PRODUCT DESCRIPTION

R50035 are linear low density polyethylene grade with balanced density and viscosity designed to provide excellent stress cracking resistance, good mechanical properties with high rigidity, toughness, and low warpage. R50035: Non-UV stabilized grade in pellet form

### APPLICATION

Rotational molding of water tanks, industrial and agricultural tanks and containers. General purpose rotomolding articles where easy processing is required.

### TECHNICAL DATA

| PROPERTIES                                | TYPICAL VALUES | UNITS             | TEST METHODS |
|---|----------------|-------------------|--------------|
| <b>POLYMER PROPERTIES</b>                 |                |                   |              |
| Melt Flow Rate @ 190°C & 2.16 kg load (1) | 5              | g/10 min          | ASTM D 1238  |
| Density (1)                               | 935            | kg/m <sup>3</sup> | ASTM D1505   |
| <b>MECHANICAL PROPERTIES</b>              |                |                   |              |
| Tensile Strength at Break (2)             | 17             | MPa               | ASTM D638    |
| Tensile Elongation at Break (2)           | 590            | %                 | ASTM D638    |
| Tensile Strength at Yield (2)             | 16             | MPa               | ASTM D638    |
| 1% Secant Modulus (2)                     | 420            | MPa               | ASTM D638    |
| Flexural Strength (2)                     | 13             | MPa               | ASTM D790    |
| Hardness (Shore D) (2)                    | 66             | -                 | ASTM D2240   |
| ESCR (100% Igepal), F50 (2)               | >              | hrs               | ASTM D1693B  |
| <b>THERMAL PROPERTIES</b>                 |                |                   |              |
| Vicat Softening Point                     | 114            | °C                | ASTM D 1525  |
| Brittleness temperature                   | < -75          | °C                | ASTM D746    |

# TECHNICAL DATASHEET

## LLDPE 118NJ

### PRODUCT DESCRIPTION

LLDPE 118NJ is a butene linear low density polyethylene resin typically used for general purpose applications. Films produced from this resin are tough with good puncture resistance, high tensile strength and good hot tack properties. LLDPE 118NJ is TNPP free.

### APPLICATION

Typical applications for LLDPE 118NJ are shipping sacks, ice bags, frozen food bags, liners, carrier bags, garbage bags, agriculture films, lamination and coextruded films, shrink film (for blending with LDPE), industrial consumer packaging and high clarity film if blended with (10-20%) LDPE.

### TECHNICAL DATA

| Properties  | Units SI          | Values     | Test methods |
|---|-------------------|------------|--------------|
| <b>Polymer properties</b>                             |                   |            |              |
| <b>Melt flow rate (MFR)</b><br>at 190 °C and 2.16 kg  | dg/min            | <b>1.0</b> | ISO 1133     |
| <b>Density</b>  | kg/m <sup>3</sup> | <b>918</b> | ISO 1183 (A) |
| <b>Formulation</b>                                    |                   |            |              |
| <b>Anti oxidant</b>                                   |                   | <b>+</b>   | SABIC method |
| <b>Optical properties</b>                             |                   |            |              |
| <b>Gloss (45°)</b>                                    | %                 | <b>50</b>  | ASTM D2457   |
| <b>Haze</b>   | %                 | <b>13</b>  | ASTM D1003A  |
| <b>Film properties</b>                                |                   |            |              |
| <b>Impact strength</b>                                | kJ/m              | <b>22</b>  | ASTM D4272   |
| <b>Tear strength TD</b>                               | kN/m              | <b>120</b> | ISO 6383-2   |
| <b>Tear strength MD</b>                               | kN/m              | <b>40</b>  | ISO 6383-2   |
| <b>Puncture resistance</b>                            | J/m               | <b>630</b> | SABIC method |
| <b>Tensile test film</b>                              |                   |            | ISO 527-3    |
| Yield stress TD                                       | MPa               | <b>11</b>  |              |
| Yield stress MD                                       | MPa               | <b>11</b>  |              |
| Stress at break TD                                    | MPa               | <b>30</b>  |              |
| Stress at break MD                                    | MPa               | <b>37</b>  |              |
| Strain at break TD                                    | %                 | <b>850</b> |              |
| Strain at break MD                                    | %                 | <b>700</b> |              |
| Modulus of elasticity TD                              | MPa               | <b>180</b> |              |
| Modulus of elasticity MD                              | MPa               | <b>160</b> |              |
| <b>Thermal properties</b>                             |                   |            |              |
| <b>Vicat softening temperature</b><br>at 10 N (VST/A) | °C                | <b>100</b> | ISO 306      |
| <b>DSC test</b><br>melting point                      | °C                | <b>121</b> |              |

# TECHNICAL DATASHEET

## LLDPE R50035E

### PRODUCT DESCRIPTION

LLDPE R50035E is a LLDPE copolymer that is designed to provide excellent stress crack resistance, excellent mechanical properties with high rigidity, toughness, gloss and very low warpage. The resin contains UV stabilizer. It is recommended that LLDPE R50035E is grinded before use in rotational molding applications.

### APPLICATION

LLDPE R50035E is designed for rotational molding of large industrial and agricultural tanks, trash containers and chemical shipping drums. Its excellent mechanical properties and low warpage makes it suitable for injection molding applications such as screw closures, caps and housewares. LLDPE R50035E is UV stabilized; that provides excellent protection for the final product.

### TECHNICAL DATA

| Properties   | Units SI          | Values         | Test methods |
|--|-------------------|----------------|--------------|
| <b>Polymer properties</b>                            |                   |                |              |
| <b>Melt flow rate (MFR)</b><br>at 190 °C and 2.16 kg | g/10 min          | <b>5.0</b>     | ASTM D 1238  |
| <b>Density</b>                                       | kg/m <sup>3</sup> | <b>935</b>     | ASTM D 1505  |
| <b>Mechanical properties</b>                         |                   |                |              |
| <b>Tensile test</b><br>stress at yield               | MPa               | <b>16</b>      | ASTM D 638   |
| stress at break                                      | MPa               | <b>17</b>      |              |
| strain at break                                      | %                 | <b>590</b>     |              |
| secant modulus at 1% elongation                      | MPa               | <b>420</b>     |              |
| <b>Flexural test</b><br>Flexural strength            | MPa               | <b>13</b>      | ASTM D 790   |
| <b>Hardness Shore D</b>                              | -                 | <b>66</b>      | ASTM D 2240  |
| <b>ESCR (100% Igepal), F50</b>                       | h                 | <b>&gt;150</b> | ASTM D 1693B |
| <b>Thermal properties</b>                            |                   |                |              |
| <b>Vicat softening temperature</b>                   | °C                | <b>114</b>     | ASTM D 1525  |
| <b>Brittleness temperature</b>                       | °C                | <b>&lt;-75</b> | ASTM D 746   |