



### Technical Data Sheet

## DOW™ LDPE 310E REN Low Density Polyethylene Resin

### Overview

DOW™ LDPE 310E REN Low Density Polyethylene Resin is a fractional melt index low density polyethylene resin. DOW™ LDPE 310E REN Low Density Polyethylene Resin blown film lines leading to significant output improvements. The resin offers additionally excellent drawdown. It can be used pure or in blends with LLDPE resins.

### Sustainability Attribute:



### Applications:

- Lamination film, shrink film, stretch film

### Main Characteristics:

- Excellent processability and draw down
- Good physical properties in blends with LLDPE
- Can be readily extruded using conventional blown film techniques at melt temperatures between 160 and 195°C

### Complies with:

- U.S. FDA 21 CFR 177.1520 (c)2.2
- EU, No 10/2011
- U.S. FDA-DMF
- ISCC PLUS certification for bio-circular plastics

Consult the regulations for complete details.

### Additive

- Antiblock: No
- Slip: No

### Physical Properties

| Physical                   | Nominal Value | Unit (English)    | Nominal Value | Unit (SI)         | Test Method <sup>1</sup> |
|----------------------------|---------------|-------------------|---------------|-------------------|--------------------------|
| Density                    | 0.923         | g/cm <sup>3</sup> | 0.923         | g/cm <sup>3</sup> | ASTM D792                |
| Melt Index (190°C/2.16 kg) | 0.75          | g/10 min          | 0.75          | g/10 min          | ASTM D1238               |
| <b>Mechanical</b>          |               |                   |               |                   |                          |
| Coefficient of Friction    | 0.50 to 0.70  |                   | 0.50 to 0.70  |                   | ASTM D1894               |

1. ASTM: American Society for Testing and Materials

These are typical properties only and are not to be construed as specifications. Users should confirm results by their own tests.



### Physical Properties (Cont.)

| Films                                                                                                                                                                                    | Nominal Value | Unit (English)        | Nominal Value | Unit (SI)         | Test Method <sup>1</sup> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------|---------------|-------------------|--------------------------|
| Film Thickness — Tested                                                                                                                                                                  | 2             | mil                   | 50            | μm                |                          |
| Film Puncture Energy (2.0 mil (50 μm))                                                                                                                                                   | 15.9          | in-lb                 | 1.80          | J                 | Dow Method               |
| Film Puncture Force (2.0 mil (50 μm))                                                                                                                                                    | 11.2          | lbf                   | 50.0          | N                 | Dow Method               |
| Film Puncture Resistance (2.0 mil (50 μm))                                                                                                                                               | 48.3          | ft-lb/in <sup>3</sup> | 4.00          | J/cm <sup>3</sup> | Dow Method               |
| Secant Modulus                                                                                                                                                                           |               |                       |               |                   | ASTM D882                |
| 2% Secant, MD: 2.0 mil (50 μm), Blown Film                                                                                                                                               | 25400         | psi                   | 175           | MPa               |                          |
| 2% Secant, TD: 2.0 mil (50 μm), Blown Film                                                                                                                                               | 26800         | psi                   | 185           | MPa               |                          |
| Tensile Strength                                                                                                                                                                         |               |                       |               |                   | ASTM D882                |
| MD: Yield, 2.0 mil (50 μm), Blown Film                                                                                                                                                   | 1600          | psi                   | 11.0          | MPa               |                          |
| TD: Yield, 2.0 mil (50 μm), Blown Film                                                                                                                                                   | 1600          | psi                   | 11.0          | MPa               |                          |
| MD: Break, 2.0 mil (50 μm), Blown Film                                                                                                                                                   | 3630          | psi                   | 25.0          | MPa               |                          |
| TD: Break, 2.0 mil (50 μm), Blown Film                                                                                                                                                   | 3340          | psi                   | 23.0          | MPa               |                          |
| Tensile Elongation                                                                                                                                                                       |               |                       |               |                   | ASTM D882                |
| MD: Break, 2.0 mil (50 μm), Blown Film                                                                                                                                                   | 390           | %                     | 390           | %                 |                          |
| TD: Break, 2.0 mil (50 μm), Blown Film                                                                                                                                                   | 570           | %                     | 570           | %                 |                          |
| Dart Drop Impact<br>(2.0 mil (50 μm)), Blown Film                                                                                                                                        | 170           | g                     | 170           | g                 | ASTM D1709A              |
| Elmendorf Tear Strength <sup>2</sup>                                                                                                                                                     |               |                       |               |                   | ASTM D1922               |
| MD: 2.0 mil (50 μm), Blown Film                                                                                                                                                          | 350           | g                     | 350           | g                 |                          |
| TD: 2.0 mil (50 μm), Blown Film                                                                                                                                                          | 260           | g                     | 260           | g                 |                          |
| <b>Optical</b>                                                                                                                                                                           |               |                       |               |                   |                          |
| Gloss (45°, 1.97 mil (50.0 μm)), Blown Film                                                                                                                                              | 58            |                       | 58            |                   | ASTM D2457               |
| Haze (1.97 mil (50.0 μm)), Blown Film                                                                                                                                                    | 9.20          | %                     | 9.20          | %                 | ASTM D1003               |
| <b>Extrusion</b>                                                                                                                                                                         |               |                       |               |                   |                          |
| Melt Temperature                                                                                                                                                                         | 320 to 383    | °F                    | 160 to 195    | °C                |                          |
| <b>Extrusion Notes</b>                                                                                                                                                                   |               |                       |               |                   |                          |
| Fabrication Conditions for Blown Film:                                                                                                                                                   |               |                       |               |                   |                          |
| <ul style="list-style-type: none"> <li>Screw Type: Universal</li> <li>Output: 25 kg/hr</li> <li>Die Diameter: 150 mm</li> <li>Blow-Up Ratio: 2.5</li> <li>Screw Speed: 77 rpm</li> </ul> |               |                       |               |                   |                          |

#### 2. Method B

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