**Technical Information**

# DOWLEX™ HMS 8018
## Polyethylene Resin

**Overview**

DOWLEX HMS 8018 Polyethylene Resin is designed for uses in Heavy Duty Shipping Sack application, both in industrial and consumer segments. Films made from this resin exhibit a combination of excellent toughness and tear resistance. This product also delivers good processability.

Application:

- Heavy Duty Industrial and Consumer Shipping Sacks

**Additive**

- Antiblock: No
- Slip: No
- Processing Aid: No

| Physical | Nominal Value | (English) | Nominal Value | (SI) | Test Method |
|---|---|---|---|---|---|
| Density | 0.920 | g/cm³ | 0.920 | g/cm³ | ASTM D792 |
| Base Density [1] | 0.920 | g/cm³ | 0.920 | g/cm³ | Dow Method |
| Melt Index (190°C/2.16 kg) | 0.90 | g/10 min | 0.90 | 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 (1.0 mil (25 µm)) | 44.0 | in·lb | 4.97 | J | Dow Method |
| Film Puncture Force (1.0 mil (25 µm)) | 12.0 | lbf | 53.4 | N | Dow Method |
| Film Puncture Resistance (1.0 mil (25 µm)) | 305 | ft·lb/in³ | 25.2 | J/cm³ | Dow Method |
| Film Toughness | | | | | ASTM D882 |
| MD : 1.0 mil (25 µm) | 1370 | ft·lb/in³ | 113 | J/cm³ | |
| TD : 1.0 mil (25 µm) | 1580 | ft·lb/in³ | 131 | J/cm³ | |
| Secant Modulus | | | | | ASTM D882 |
| 1% Secant, MD : 1.0 mil (25 µm) | 34100 | psi | 235 | MPa | |
| 2% Secant, MD : 1.0 mil (25 µm) | 30000 | psi | 207 | MPa | |
| 2% Secant, MD : 2.0 mil (51 µm) | 25000 | psi | 173 | MPa | |
| 1% Secant, TD : 1.0 mil (25 µm) | 38500 | psi | 265 | MPa | |
| 2% Secant, TD : 1.0 mil (25 µm) | 32700 | psi | 225 | MPa | |
| 2% Secant, TD : 2.0 mil (51 µm) | 26200 | psi | 181 | MPa | |
| Tensile Strength | | | | | ASTM D882 |
| MD : Yield, 1.0 mil (25 µm) | 1570 | psi | 10.8 | MPa | |
| MD : Yield, 2.0 mil (51 µm) | 1590 | psi | 11.0 | MPa | |
| TD : Yield, 1.0 mil (25 µm) | 1680 | psi | 11.6 | MPa | |
| TD : Yield, 2.0 mil (51 µm) | 1580 | psi | 10.9 | MPa | |
| MD : Break, 1.0 mil (25 µm) | 6590 | psi | 45.4 | MPa | |
| MD : Break, 2.0 mil (51 µm) | 5470 | psi | 37.7 | MPa | |
| TD : Break, 1.0 mil (25 µm) | 6030 | psi | 41.6 | MPa | |
| TD : Break, 2.0 mil (51 µm) | 6080 | psi | 41.9 | MPa | |
| Tensile Elongation | | | | | ASTM D882 |
| MD : Break, 1.0 mil (25 µm) | 570 | % | 570 | % | |
| MD : Break, 2.0 mil (51 µm) | 580 | % | 580 | % | |
| TD : Break, 1.0 mil (25 µm) | 750 | % | 750 | % | |
| TD : Break, 2.0 mil (51 µm) | 720 | % | 720 | % | |
| Dart Drop Impact | | | | | ASTM D1709A |
| 1.0 mil (25 µm) | 210 | g | 210 | g | |
| 2.0 mil (51 µm) | 340 | g | 340 | g | |
| Elmendorf Tear Strength | | | | | ASTM D1922 |
| MD : 1.0 mil (25 µm) | 360 | g | 360 | g | |
| MD : 2.0 mil (51 µm) | 850 | g | 850 | g | |
| TD : 1.0 mil (25 µm) | 640 | g | 640 | g | |
| 2.0 mil (51 µm) | 1100 | g | 1100 | g | |

| Thermal | Nominal Value (English) | | Nominal Value (SI) | | Test Method |
|---|---|---|---|---|---|
| Vicat Softening Temperature | 225 | °F | 107 | °C | ASTM D1525 |
| Melting Temperature (DSC) | 246 | °F | 119 | °C | Dow Method |

| Optical | Nominal Value (English) | | Nominal Value (SI) | | Test Method |
|---|---|---|---|---|---|
| Gloss | | | | | ASTM D2457 |
| 45°, 1.00 mil (25.4 µm) | 41 | | 41 | | |
| 45°, 2.00 mil (50.8 µm) | 81 | | 81 | | |
| Haze | | | | | ASTM D1003 |
| 1.00 mil (25.4 µm) | 16 | % | 16 | % | |
| 2.00 mil (50.8 µm) | 8.8 | % | 8.8 | % | |

**Extrusion Notes**

Fabrication Conditions for 1 mil monolayer blown film at 100%

- Die Diameter: 8 in.
- Screw Type: DSB II
- Die Gap: 70 mil
- Melt Temperature: 416°F
- Output: 12 lb/hr/in. of die circumference
- Screw Size: 3.5 in.
- Blow-Up Ratio: 2.5 to 1
- Screw Speed: 39 rpm
- Frost Line Height: 46 in.

Fabrication Conditions for 2 mil monolayer blown film at 100%

- Die Diameter: 5.9 in.
- Die Gap: 70 mil
- Melt Temperature: 428°F
- Output: 50 kg/h
- Screw Size: 2.3 in.
- Blow-Up Ratio: 2.5 to 1
- Screw Speed: 60 rpm
- Frost Line Height: 19.7 in

## Notes

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

[1] Base density is estimated using the assumption that every 1000 ppm of antiblock in the finished product raises the density of the polymer by 0.0006 g/cm³. Base density is the estimated density of the polymer if it did not contain any antiblock.