

Alathon®

M6138

High Density Polyethylene
Injection Molding Grade

Melt Index 3.8 Density 0.961

Applications

ALATHON M6138 is high density polyethylene resin for use in injection molding applications. This resin exhibits good impact resistance and high stiffness. Typical applications include agricultural bins, crates, open head pails, trays and consumer durable goods.

Regulatory Status

M6138 meets the requirements of the Food and Drug Administration regulation 21 CFR 177.1520. This regulation allows the use of this olefin polymer in "...articles or components of articles intended for use in contact with food." Specific limitations or conditions of use may apply. Contact your Equistar sales representative for more information.

Processing Techniques

Specific recommendations for processing M6138 can only be made when the processing conditions, equipment and end use application are known. For further information please contact your Equistar Sales Representative or refer to the [Start-up Conditions for HDPE](#) on the Lyondell web site. Additional [Injection Molding Technical Topics](#) can also be found on the Lyondell web site.

Suggested Start-up Conditions

Extruder Zone	Rear	Center	Front	Nozzle
Cylinder Temperature, °F (°C)	450 (232)	470 (243)	475 (246)	475 (246)

Physical Properties

Resin Properties	Nominal Values		Test Method
	English Units	SI Units	
Melt Index, 190°C, 2.16 kg		3.8 g/10 min	ASTM D 1238
Spiral Flow ¹	8.0 in	20.3 (cm)	Equistar
Density		0.961 g/cc	ASTM D 1505
Bulk Density	33-37 lb/ft ³	529-593 kg/m ³	ASTM D 1895
Molded Properties			ASTM D 4796
Tensile Stress, Yield	4,620 psi	31.9 MPa	ASTM D 638*
Elongation, Yield		7 %	ASTM D 638*
Tensile Stress, Break	3,150 psi	21.7 MPa	ASTM D 638*
Elongation, Break		810 %	ASTM D 638*
Flexural Modulus, 1% Secant	238,400 psi	1,640 MPa	ASTM D 790**
Izod Impact, 23 °C	1.1 ft-lbs/in	60 J/m	ASTM D 256
Unnotched Impact, -18 °C	No Break	No Break	ASTM D 4812
Vicat Softening Point	267.4 °F	130.8 °C	ASTM D 1525
Hardness, Shore D		72	ASTM D 2240
Heat Deflection Temperature, 66 psi ²	179.1 °F	81.7 °C	ASTM D 648
Low Temperature Brittleness, F ₅₀ ²	<-105 °F	<-76 °C	ASTM D 746

See Page 2 for Other Properties

- ¹ Measures the number of inches of flow produced when molten resin is injected into a long, spiral channel (0.0625" insert), at a constant injection pressure of 1000 psi with a melt temperature of 440°F.
 - ² Data are for control and development work and not intended for use in design or predicting performance at elevated or sub-ambient temperatures.
- * Conditions: 50 mm/min, Type IV
 ** Conditions: 12.5 mm/min



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**Other
Properties**

	Nominal Values		Test Method
	English Units	SI Units	
Thermal Properties			
Melting Temperature	273.0 °F	133.9 °C	ASTM D 3418
Crystallization Temperature	244.4 °F	118.0 °C	ASTM D 3418
	English Units	SI Units	Test Method
Molded Properties			ASTM D 4976
Flexural Modulus, 2% Secant	199,100 psi	1,370 MPa	ASTM D 790**
Flexural Young's Modulus	253,100 psi	1,740 MPa	ASTM D 790**
Tensile Modulus, 1% Secant	136,200 psi	939 MPa	ASTM D 638***
Tensile Young's Modulus	176,500 psi	1,220 MPa	ASTM D 638***

** Conditions: 12.5 mm/min

*** Conditions: 50 mm/min, Type I

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Lyondell Chemical Company
1221 McKinney, Suite 700
P.O. Box 2583
Houston, Texas 77252-2583
(800) 615-8999
<http://www.lyondell.com>