

Ultramid® A3L HP

BASF Corporation - Polyamide 66

Monday, November 4, 2019

General Information

Product Description

Ultramid A3L HP is an unreinforced, heat stabilized, impact modified, high flow, nylon 66 for injection molding. This grade has excellent flow and improved ambient and low temperature toughness.

Applications

Typical applications include fasteners and clamps.

31 11	•		
General			
Material Status	Commercial: Active		
Availability	North America		
Additive	 Heat Stabilizer 	Impact Modifier	
Features	Heat StabilizedHigh Flow	 Impact Modified Low Temperature Toughness	Oil Resistant
Uses	• Fasteners		
Agency Ratings	• EC 1907/2006 (REACH)		
RoHS Compliance	 RoHS Compliant 		
Automotive Specifications	FORD WSK-M4D706-AFORD WSS-M4D706-B1	GM GMP.PA66.015 Color: Black GM GMP.PA66.015 Color: Natural	 GM GMW16447P-PA66-T2 Color: Natural GM GMW16558P-PA66-T1 Color: Natural
Forms	• Pellets		
Processing Method	Injection Molding		

Density 1.10 g/cm³ ISO 1183 Mechanical Nominal Value Unit Test Method Tensile Modulus (73°F) 354000 psi ISO 527-2 Tensile Stress (Yield, 73°F) 9210 psi ISO 527-2 Tensile Strain (Yield, 73°F) 6.2 % ISO 527-2 Nominal Tensile Strain at Break (73°F) 28 % ISO 527-2 Flexural Modulus (73°F) 331000 psi ISO 178 mpact Nominal Value Unit Test Method Charpy Notched Impact Strength ISO 179 ISO 179 -22°F 6.7 ft·lb/in² ISO 180 73°F 9.0 ft·lb/in² ISO 180 A0°F 5.7 ft·lb/in² ISO 180 73°F 8.6 ft·lb/in² ISO 180	ASTM & ISO Properties 1					
Mechanical Nominal Value Unit Test Method Tensile Modulus (73°F) 354000 psi ISO 527-2 Tensile Stress (Yield, 73°F) 9210 psi ISO 527-2 Tensile Strain (Yield, 73°F) 6.2 % ISO 527-2 Nominal Tensile Strain at Break (73°F) 28 % ISO 527-2 Flexural Modulus (73°F) 331000 psi ISO 178 mpact Nominal Value Unit Test Method Charpy Notched Impact Strength 5.7 ft·lb/in² -22°F 6.7 ft·lb/in² 73°F 9.0 ft·lb/in² Notched Izod Impact Strength 5.7 ft·lb/in² -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/B	Physical	Nominal Value	Unit	Test Method		
Tensile Modulus (73°F) 354000 psi ISO 527-2 Tensile Stress (Yield, 73°F) 9210 psi ISO 527-2 Tensile Strain (Yield, 73°F) 6.2 % ISO 527-2 Nominal Tensile Strain at Break (73°F) 28 % ISO 527-2 Flexural Modulus (73°F) 331000 psi ISO 178 mpact Nominal Value Unit Test Method Charpy Notched Impact Strength 6.7 ft·lb/in² -22°F 6.7 ft·lb/in² 73°F 9.0 ft·lb/in² Notched Izod Impact Strength 5.7 ft·lb/in² -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/B	Density	1.10	g/cm³	ISO 1183		
Tensile Stress (Yield, 73°F) 9210 psi ISO 527-2 Tensile Strain (Yield, 73°F) 6.2 % ISO 527-2 Nominal Tensile Strain at Break (73°F) 28 % ISO 527-2 Flexural Modulus (73°F) 331000 psi ISO 178 mpact Nominal Value Unit Test Method Charpy Notched Impact Strength 6.7 ft·lb/in² -22°F 6.7 ft·lb/in² 73°F 9.0 ft·lb/in² Notched Izod Impact Strength 5.7 ft·lb/in² -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/A	Mechanical	Nominal Value	Unit	Test Method		
Tensile Strain (Yield, 73°F) 6.2 % ISO 527-2 Nominal Tensile Strain at Break (73°F) 28 % ISO 527-2 Flexural Modulus (73°F) 331000 psi ISO 178 mpact Nominal Value Unit Test Method Charpy Notched Impact Strength ISO 179 ISO 179 -22°F 6.7 ft·lb/in² ISO 179 73°F 9.0 ft·lb/in² ISO 180 -40°F 5.7 ft·lb/in² ISO 180 73°F 8.6 ft·lb/in² Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/B	Tensile Modulus (73°F)	354000	psi	ISO 527-2		
Nominal Tensile Strain at Break (73°F) 28 % ISO 527-2 Flexural Modulus (73°F) 331000 psi ISO 178 mpact Nominal Value Unit Test Method Charpy Notched Impact Strength 6.7 ft·lb/in² ISO 179 -22°F 6.7 ft·lb/in² ISO 180 73°F 9.0 ft·lb/in² ISO 180 -40°F 5.7 ft·lb/in² ISO 180 73°F 8.6 ft·lb/in² ISO 180 Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/B	Tensile Stress (Yield, 73°F)	9210	psi	ISO 527-2		
Sol 178	Tensile Strain (Yield, 73°F)	6.2	%	ISO 527-2		
mpact Nominal Value Unit Test Method Charpy Notched Impact Strength ISO 179 -22°F 6.7 ft·lb/in² 73°F 9.0 ft·lb/in² Notched Izod Impact Strength 5.7 ft·lb/in² -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/B	Nominal Tensile Strain at Break (73°F)	28	%	ISO 527-2		
Charpy Notched Impact Strength ISO 179 -22°F 6.7 ft·lb/in² 73°F 9.0 ft·lb/in² Notched Izod Impact Strength 5.7 ft·lb/in² -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/A	Flexural Modulus (73°F)	331000	psi	ISO 178		
-22°F 6.7 ft·lb/in² 73°F 9.0 ft·lb/in² Notched Izod Impact Strength 5.7 ft·lb/in² -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/A	Impact	Nominal Value	Unit	Test Method		
73°F 9.0 ft·lb/in² Notched Izod Impact Strength	Charpy Notched Impact Strength			ISO 179		
Notched Izod Impact Strength ISO 180 -40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/A	-22°F	6.7	ft·lb/in²			
-40°F 5.7 ft·lb/in² 73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/A	73°F	9.0	ft·lb/in²			
73°F 8.6 ft·lb/in² Thermal Nominal Value Unit Test Method Heat Deflection Temperature (66 psi, Unannealed) 378 °F ISO 75-2/B Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/A	Notched Izod Impact Strength			ISO 180		
ThermalNominal ValueUnitTest MethodHeat Deflection Temperature (66 psi, Unannealed)378°FISO 75-2/BHeat Deflection Temperature (264 psi, Unannealed)158°FISO 75-2/A	-40°F	5.7	ft·lb/in²			
Heat Deflection Temperature (66 psi, Unannealed)378 °FISO 75-2/BHeat Deflection Temperature (264 psi, Unannealed)158 °FISO 75-2/A	73°F	8.6	ft·lb/in²			
Heat Deflection Temperature (264 psi, Unannealed) 158 °F ISO 75-2/A	Thermal	Nominal Value	Unit	Test Method		
	Heat Deflection Temperature (66 psi, Unannealed)	378	°F	ISO 75-2/B		
Melting Temperature (DSC) 500 °F ISO 3146	Heat Deflection Temperature (264 psi, Unannealed)	158	°F	ISO 75-2/A		
	Melting Temperature (DSC)	500	°F	ISO 3146		



Ultramid® A3L HP BASF Corporation - Polyamide 66

Thermal	Nominal Value	Unit	Test Method
RTI Elec			UL 746
0.030 in	284	°F	
0.12 in	284	°F	
RTI Imp			UL 746
0.030 in	221	°F	
0.12 in	221	°F	
RTI Str			UL 746
0.030 in	230	°F	
0.12 in	230	°F	
Flammability	Nominal Value	Unit	Test Method
Flame Rating			UL 94
0.030 in	НВ		
0.12 in	НВ		

Processing Information					
Injection	Nominal Value	Unit			
Drying Temperature	140	°F			
Drying Time	1.0 to 2.0	hr			
Suggested Max Moisture	0.040 to 0.20	%			
Processing (Melt) Temp	550 to 581	°F			
Mold Temperature	140 to 212	°F			
Injection Pressure	508 to 1810	psi			
Injection Rate	Fast				
Back Pressure	0.00 to 50.8	psi			
Screw Speed	40 to 80	rpm			
Screw Compression Ratio	3.0:1.0 to 4.0:1.0				

Notes

¹ Typical properties: these are not to be construed as specifications.