

Ultramid® A4H

Polyamide 66

BASF Corporation

Message:

A high heat aging resistant, medium viscosity injection moulding grade for highly stressed parts such as bearing cages, gear-wheels, coil formers and cable connectors.

General Information	
UL YellowCard	E41871-233760
Features	Good heat aging resistance
	Oil resistance
	Medium viscosity
Uses	Wheels
	Connector
Agency Ratings	EC 1907/2006 (REACH)
RoHS Compliance	RoHS compliance
Forms	Particle
Processing Method	Injection molding
Multi-Point Data	Isothermal Stress vs. Strain (ISO 11403-1)
	Secant Modulus vs. Strain (ISO 11403-1)
	Shear Modulus vs. Temperature (ISO 11403-1)
	Viscosity vs. Shear Rate (ISO 11403-2)

Physical	Dry	Conditioned	Unit	Test Method
Density	1.13	--	g/cm ³	ISO 1183
Apparent Density	0.70	--	g/cm ³	
Melt Volume-Flow Rate (MVR) (275°C/5.0 kg)	40.0	--	cm ³ /10min	ISO 1133
Water Absorption				ISO 62
Saturated, 23°C	8.0 - 9.0	--	%	ISO 62
Equilibrium, 23°C, 50% RH	2.5 - 3.1	--	%	ISO 62
Viscosity Number (96% H ₂ SO ₄)	190	--	cm ³ /g	ISO 307
Mold Shrinkage - constrained ¹	0.90	--	%	
Temperature index-at 50% loss of tensile strength				IEC 60216
-- ²	118	--	°C	IEC 60216
-- ³	138	--	°C	IEC 60216

Maximum operating temperature-short cycle operation	200	--	°C	
Automotive Materials (> 1.00 mm)	Passed	--		FMVSS 302
Polymer Abbreviation	PA66	--		
Screw Speed			mm/sec	
Mechanical	Dry	Conditioned	Unit	Test Method
Tensile Modulus	3100	1200	MPa	ISO 527-2
Tensile Stress (Yield)	85.0	50.0	MPa	ISO 527-2/50
Tensile Strain (Yield)	4.2	20	%	ISO 527-2/50
Nominal Tensile Strain at Break	25	> 50	%	ISO 527-2/50
Tensile Creep Modulus ⁴ (1000 hr)	--	700	MPa	ISO 899-1
Flexural Modulus	3000	--	MPa	ISO 178
Impact	Dry	Conditioned	Unit	Test Method
Charpy Notched Impact Strength				ISO 179/1eA
-30°C	5.0	--	kJ/m ²	ISO 179/1eA
23°C	5.7	25	kJ/m ²	ISO 179/1eA
Charpy Unnotched Impact Strength (23°C)	No Break	No Break		ISO 179/1eU
Notched Izod Impact				ISO 180/A
-30°C	7.0	7.0	kJ/m ²	ISO 180/A
23°C	5.5 kJ/m ²	No Break		ISO 180/A
Thermal	Dry	Conditioned	Unit	Test Method
Heat Deflection Temperature				
0.45 MPa, not annealed	220	--	°C	ISO 75-2/B
1.8 MPa, not annealed	75.0	--	°C	ISO 75-2/A
Melting Temperature	260	--	°C	ISO 11357-3
CLTE - Flow (23 to 80°C)	7.0E-5 - 1.0E-4	--	cm/cm/°C	ISO 11359-2
Specific Heat	1700	--	J/kg/°C	
Thermal Conductivity	0.33	--	W/m/K	DIN 52612
Electrical	Dry	Conditioned	Unit	Test Method
Surface Resistivity	--	1.0E+10	ohms	IEC 60093
Volume Resistivity	1.0E+15	1.0E+12	ohms·cm	IEC 60093
Relative Permittivity (1 MHz)	3.20	5.00		IEC 60250
Dissipation Factor (1 MHz)	0.025	0.20		IEC 60250
Comparative Tracking Index (Solution A)	600	--	V	IEC 60112
Flammability	Dry	Conditioned	Unit	Test Method
Flame Rating (1.60 mm)	V-2	--		UL 94

Injection	Dry	Unit
Drying Temperature	80.0	°C
Drying Time	4.0	hr
Suggested Max Moisture	0.15	%
Hopper Temperature	80.0	°C
Rear Temperature	290	°C
Middle Temperature	290	°C
Front Temperature	290	°C
Nozzle Temperature	290	°C
Processing (Melt) Temp	280 - 300	°C
Mold Temperature	60.0 - 80.0	°C

Injection instructions

Residence Time : <10 min

NOTE

1. Test box with central gating, dimensions of base (107*47*1,5) mm, processing conditions: TM = 290°C, TW = 60°C
2. 20000 h
3. 5000 h
4. strain <= 0.5%, 23°C

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