

## Ixef® 2011 polyarylamide

Ixef® 2011 is a general purpose, 42% mineral reinforced polyarylamide which exhibits high strength and stiffness, low warpage, and outstanding surface gloss.

- Natural: Ixef® 2011/0000
- Black: Ixef® 2011/9000
- Custom Colorable

### General

Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Filler / Reinforcement	• Mineral, 42% Filler by Weight	
Features	• Chemical Resistant • Creep Resistant • Good Dimensional Stability • High Flow • High Stiffness	• High Strength • Low Moisture Absorption • Low Warpage • Outstanding Surface Finish
Uses	• Appliance Components • Appliances • Automotive Applications • Automotive Electronics • Automotive Interior Parts • Automotive Under the Hood • Bushings • Business Equipment	• Camera Applications • Furniture • Gears • Industrial Applications • Lawn & Garden Equipment • Machine/Mechanical Parts • Metal Replacement • Power/Other Tools
RoHS Compliance	• RoHS Compliant	
Appearance	• Black	• Colors Available
Forms	• Pellets	
Processing Method	• Injection Molding	

Physical	Typical Value	Unit	Test method
Density	1.58	g/cm <sup>3</sup>	ISO 1183
Molding Shrinkage - Flow	0.15 to 0.35	%	Internal Method
Water Absorption (24 hr, 23°C)	0.30	%	ISO 62
Moisture Absorption - Equil, 65% RH	2.0	%	Internal Method

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	15300	MPa	ISO 527-1
Tensile Stress (Break)	130	MPa	ISO 527-2
Tensile Strain (Break)	1.3	%	ISO 527-2
Flexural Modulus	14200	MPa	ISO 178
Flexural Stress	180	MPa	ISO 178

Impact	Typical Value	Unit	Test method
Charpy Notched Impact Strength	2.1	kJ/m <sup>2</sup>	ISO 179
Charpy Unnotched Impact Strength	29	kJ/m <sup>2</sup>	ISO 179
Notched Izod Impact Strength	2.2	kJ/m <sup>2</sup>	ISO 180
Unnotched Izod Impact Strength	24	kJ/m <sup>2</sup>	ISO 180

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load 1.8 MPa, Unannealed	165	°C	ISO 75-2/A
Melting Temperature	235	°C	ISO 11357-3
CLTE - Flow	1.8E-5	cm/cm/°C	ISO 11359-2

Electrical	Typical Value	Unit	Test method
Surface Resistivity	1.0E+10	ohms	IEC 60093
Volume Resistivity	1.0E+13	ohms·cm	IEC 60093
Electric Strength	24	kV/mm	IEC 60243-1
Dielectric Constant (110 Hz)	4.30		IEC 60250
Dissipation Factor (110 Hz)	9.0E-3		IEC 60250
Comparative Tracking Index	520	V	IEC 60112

Flammability	Typical Value	Unit	Test method
Flame Rating <sup>1</sup>	HB		UL 94
Oxygen Index	29	%	ISO 4589-2

Injection	Typical Value	Unit
Drying Temperature	120	°C
Drying Time	0.50 to 1.5	hr
Rear Temperature	250 to 260	°C
Front Temperature	260 to 290	°C
Processing (Melt) Temp	280	°C
Mold Temperature	120 to 140	°C
Screw L/D Ratio	15.0:1.0 to 20.0:1.0	

### Injection Notes

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Hot Runners: 250°C to 260°C (482°F to 500°F)

Injection Pressure: rapid

### Storage

Ixef® compounds are shipped in moisture-resistant packages at moisture levels according to specifications. Sealed, undamaged bags should be preferably stored in a dry room at a maximum temperature of 50°C (122°F) and should be protected from possible damage. If only a portion of a package is used, the remaining material should be transferred into a sealable container. It is recommended that Ixef® resins be dried prior to molding following the recommendations found in this datasheet and/or in the Ixef® processing guide.

### Drying

The material as supplied is ready for molding without drying. However, if the bags have been open for longer than 24 hours, the material needs to be dried. When using a desiccant air dryer with dew point of -28°C (-18°F) or lower, these guidelines can be followed: 0.5-1.5 hour at 120°C (248°F), 1-3 hours at 100°C (212°F), or 1-7 hours at 80°C (176°F).

### Injection Molding

IXEF 2011 compound can be readily injection molded in most screw injection molding machines. A general purpose screw is recommended, with minimum back pressure.

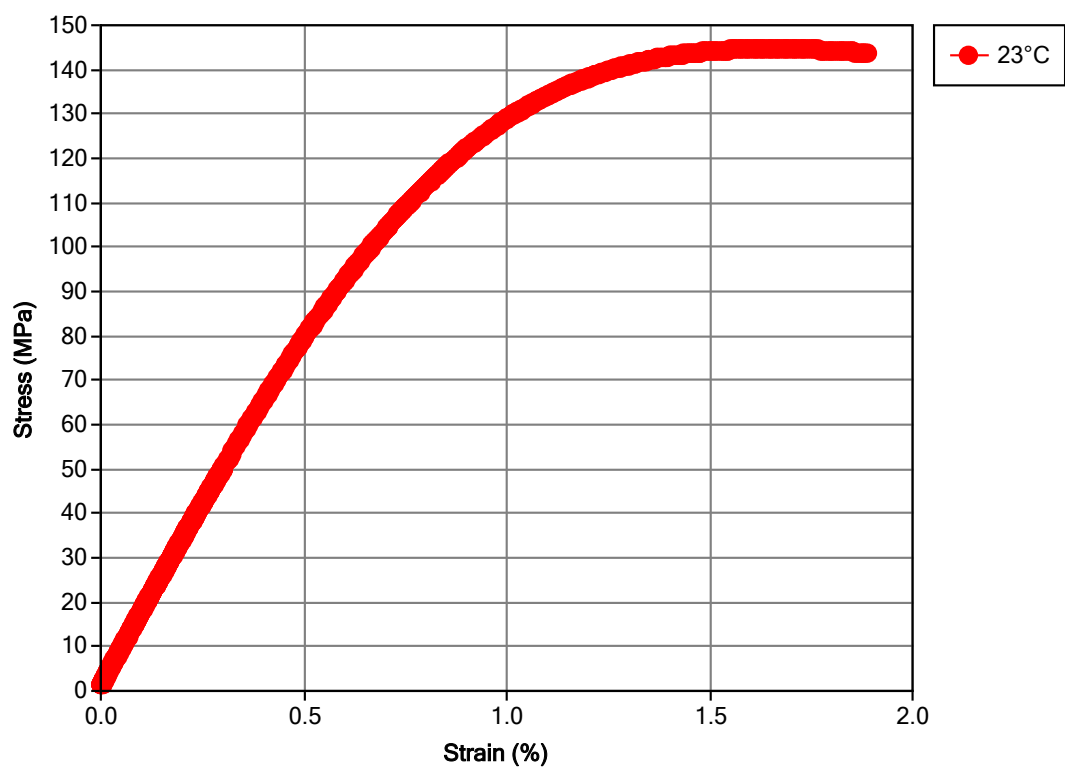
The measured melt temperature should be about 280°C (536°F), and the barrel temperatures should be around 250 to 260°C (482 to 500°F) in the rear zone, gradually increasing to 260°C to 290°C (500°F to 554°F) in the front zone. If hot runners are used, they should be set to 250°C to 260°C (482°F to 500°F).

To maximize crystallinity, the temperature of the mold cavity surface must be held between 120°C and 140°C (248°F and 284°F). Molding at lower temperatures will produce articles that may warp, have poor surface appearance, and have a greater tendency to creep. Set injection pressure to give rapid injection. Adjust holding pressure and hold time to maximize part weight. Transfer from injection to hold pressure at the screw position just before the part is completely filled (95%-99%).

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Isothermal Stress vs. Strain (ISO 11403)

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## Notes

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

<sup>1</sup> These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

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