Ixef® BXT 2000
polyarylamide

Ixef® BXT 2000-0203 resin was developed specifically for extrusion and blow-molding processes. Unlike grades targeted for injection molding, Ixef® BXT 2000-0203 resin can be successfully extruded into tube, pipe, sheet and film and blow-molded into various profiles.

BXT 2000-0203 resin has proven permeation resistance to most automotive fluids and fuels. It also offers low moisture absorption, excellent dimensional stability, and chemical resistance as well as outstanding mechanical properties.

- Natural: Ixef® BXT 2000-0203

General		
Material Status	• Commercial: Active	
Availability	• Africa & Middle East • Asia Pacific • Europe	• Latin America • North America
Features	• Barrier Resin • Chemical Resistant • Creep Resistant • Fuel Resistant	• Good Dimensional Stability • High Flow • Low Moisture Absorption • Outstanding Surface Finish
Uses	• Blow Molding Applications • Film • Piping	• Sheet • Tubing
RoHS Compliance	• Contact Manufacturer	
Appearance	• Natural Color	
Forms	• Pellets	
Processing Method	• Blow Molding	• Extrusion

Physical	Typical Value	Unit	Test method
Density	1.12	g/cm³	ISO 1183
Apparent (Bulk) Density	0.70	g/cm³	ASTM D1895B
Melt Flow (240°C)	6.00	g/10 min	

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	2470	MPa	ISO 527-1
Tensile Strength			
Yield	63.4	MPa	ASTM D638
Yield	63.8	MPa	ISO 527-2
Break	39.9	MPa	ASTM D638
Tensile Elongation			
Yield	4.0	%	ASTM D638
Yield	3.7	%	ISO 527-2
Tensile Strain (Break)	44	%	ASTM D638
Nominal Tensile Strain at Break	77	%	ISO 527-2
Modulus of Elasticity	2.48	GPa	ASTM D638

Films	Typical Value	Unit	Test method
Permeation - CE 10 Fuel (60°C)	0.83	g·mm/m²/at m/24 hr	SAE J2659

Impact	Typical Value	Unit	Test method
Notched Izod Impact			
--	350	J/m	ASTM D256
--	15	kJ/m²	ISO 180
Unnotched Izod Impact Strength	190	kJ/m²	ISO 180
Unnotched Izod Impact	No Break		ASTM D4812

Thermal	Typical Value	Unit	Test method
Deflection Temperature Under Load			ISO 75-2/A
1.8 MPa, Unannealed	82.0	°C	
Melting Temperature	230	°C	

Additional Information

Values are typical of limited production. Specifications for this product are not established yet.

Extrusion	Typical Value	Unit
Drying Temperature	85	°C
Drying Time	4.0 to 8.0	hr
Cylinder Zone 1 Temp.	220	°C
Cylinder Zone 2 Temp.	235	°C
Cylinder Zone 3 Temp.	250	°C
Adapter Temperature	250	°C
Die Temperature	250	°C
Take-Off Roll	107	°C
Screw L/D Ratio	20.0:1.0 to 30.0:1.0	

Extrusion Notes

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:

- All Ixef® extrusion grades should be dried to moisture levels of less than 1200 ppm prior to processing. This is usually accomplished in a desiccated dryer set at 185°F (85°C) for 4 to 8 hours. Moisture content may be checked using a thermogravimetric analyzer set at 338°F (170°C). The test should be run until no additional moisture is detected or at least 20 minutes. Once dry, proper steps must be taken to insure that no moisture is picked up by the resin before processing.

Extrusion Equipment:

- Ixef® extrusion grades can generally be processed on standard extrusion equipment capable of achieving the process temperatures required. The extruder should be sized to keep polymer residence time under five minutes. The extruder screw should have a Length/Diameter (L/D) ratio of 20:1 to 30:1, and a compression ratio of at least 3:1, preferably 4:1. The screw should be designed to have 40 to 50% feed zone, 25 to 30% transition zone and 25 to 30% metering zone.

- Extrusion die design should minimize sharp transitions and eliminate dead zones where polymer may be held up and degrade. Spider plates for tube dies and crossheads for wire coating should offer generous tapers to minimize nit lines.

- Extrusion dies should be constructed of appropriate materials, preferably stainless steel and all flow surfaces highly polished. The die should contain heater cartridges and a controlling thermocouple. A pressure transducer is recommended to monitor die pressure and prevent equipment damage. A melt temperature sensor is recommended to prevent excessive polymer temperatures.

Processing:

- The extruder barrel adapter(s) and die should be set at the temperatures noted on the data sheet for the particular grade being processed. A positive temperature profile (gradually increasing temperature from rear to front of the extruder) should always be used. When starting up, it is advisable to allow the equipment to soak at temperature for at least two hours to allow all components to reach a correct and uniform temperature.

- Screw speeds of 10 rpm or greater will provide the shear necessary to melt and homogenize the polymer as well as to keep residence times to a minimum.

- It is advisable to start the extrusion process slowly to monitor pressures and melt quality. Minor adjustments in temperature can have a significant effect on melt quality.

Tubing:

- The excellent melt strength of the unfilled extrusion grade allows for great flexibility in draw. Tubes may be sized from 50 to 99% of the die diameter. (Draw down ratios from 1:1 to 2:1.) A vacuum calibrator is generally used to size the O.D. of the tube, with sizing rings at the desired diameter. The calibrator should be placed as close to the die as possible. A water spray in the calibrator is not

usually required due to high heat transfer. Depending on extruder size and extrudate dimension, high extrusion rates can be achieved and are desirable.

Film/Sheet:

- Films of thickness down to 0.004 (0.01mm) have been successfully extruded in the unfilled grades. The extrudate can be drawn significantly, allowing a number of gauge films to be produced from a single die, simply by varying the takeoff speed. Film width is a function of the die, however it can also be controlled by moving the take-up rolls away from the die. As the rolls are moved further from the die, the width of the film will decrease as long as the film is being drawn. The filled grades can practically be extruded as thin as 0.020 (0.5mm) and cannot be drawn as much as the unfillled.

Profile:

- Highly-toleranced and near-net shape profiles may be formed with Ixef® Extrusion grades. Die design should be as noted above with dimensions cut to be 100% to 110% of the desired finished dimension. As the extrudate will often be relatively low in viscosity, especially for the unfilled grades, various methods of supporting the extrudate as it cools may be employed. These include complete encapsulative support, vacuum forming and the use of fixtures to maintain shape and tolerance. While most profiles will utilize a takeoff puller, in some cases the puller can be used to impart back pressure to help build die pressure and densify the profile. This will usually be the case in large cross section profiles. Consideration of control of the cooling rate should be given for large profiles to prevent stress cracks. The cooling rate may be controlled by the use of heated forming fixtures.

Blow Molding:

- Standard practices for blow molding should be followed. The temperature profile noted below should be used as a starting point and adjusted to achieve optimum parison quality.

Process Setup:

- Machine Conditions
- Starting point temperatures for extrusion or blow molding
- Extruder temperatures
  - Barrel, Rear: 428°F (220°C)
  - Middle: 465°F (235°C)
  - Front: 480°F (250°C)
  - Adapter: 470°F (245°C)
  - Die: 460°F (240°C)

- The above temperatures may need to be adjusted to achieve optimum extrudate appearance and extrusion rates. Avoid temperatures above 525°F (275°C).

- Sheet and film take off roll temperatures: Minimum 225°F(107°C)

Shutdown and Purging Instructions:

- It is recommended that the machine be purged of Ixef® resin at the end of a run. This can be accomplished by running the extruder dry and then adding an appropriate purge compound to the feed hopper and running the screw until the extrudate is clear of any Ixef® resin. If a purge compound is not available, fractional melt flow (extrusion grade) polyethylene will be an acceptable purge.

- Once all the Ixef® resin has been purged from the machine, reduce the barrel temperatures. It is strongly suggested that any heads or dies be removed and cleaned while still warm.

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

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