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General recommendations for injection molding IXEF[®] compounds

(Standard grades)

EQUIPMENT	
<ul style="list-style-type: none"> • Conventional equipment for molding thermoplastics 	
<ul style="list-style-type: none"> • Screw characteristics <ul style="list-style-type: none"> - Compression ratio 2 to 3 - L/D ratio 15 to 20 	
<ul style="list-style-type: none"> • Check valve 	
<ul style="list-style-type: none"> • Insulation plates (between machine platen and tool) 	

DRYING	
<i>Recommended for bags open longer than 24 hours</i>	
<ul style="list-style-type: none"> • Hot air drying <ul style="list-style-type: none"> - Temperature 175 °F - Duration 12 h 	
<ul style="list-style-type: none"> • Desiccant drying <ul style="list-style-type: none"> - Temperature 250 °F - Duration 4 to 5 h 	

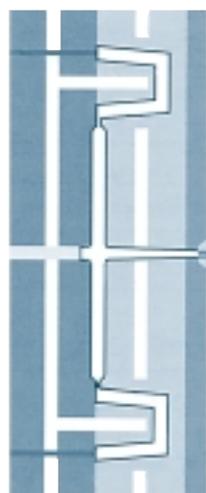
<ul style="list-style-type: none"> • Material temperature (purged material) <ul style="list-style-type: none"> - Standard grades 535 °F - Flame-retarded and impact modified grades < 520 °F 	
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Mold temperature
250 to 285 °F

It is essential that the mold temperature be maintained between 250 and 285 °F to achieve maximum crystallinity during molding. An item molded at too low a mold temperature can suffer from the following defects:

- higher water pickup
- risk of post-crystallisation
- Poor surface appearance
- higher tendency to creep
- lower shrinkage.

Cooling time (1) including holding time $2.5 \times e^2 \text{ s}$



<ul style="list-style-type: none"> • Cylinder temperatures <ul style="list-style-type: none"> - Feed zone 480 to 535 °F - Compression zone 480 to 535 °F - Metering zone 480 to 535 °F - Nozzle zone 500 to 555 °F - Hot runners (when used) 480 to 500 °F 	
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INJECTION	
• Speed	high
• Injection time	0.5 to 2.5 s
HOLD	
• Hold pressure	4350 to 22000 psi
• Initial hold time (1)	$3 \times e \text{ s}$

<ul style="list-style-type: none"> • Screw speed <ul style="list-style-type: none"> 35 to 75 rpm for screw diameter 1-2 in. • Back pressure <ul style="list-style-type: none"> 0 to 150 psi

e (mm) = maximum wall thickness (1) = initial values to be optimized





Injection conditions for IXEF[®] compounds

(Standard grades)

General recommendations

TEMPERATURE	<ul style="list-style-type: none"> - Verify the temperature of the mold cavities using a temperature probe - Confirm the melt temperature using a temperature probe moved about in a volume of melt, shot onto an insulator (a glove, cardboard, etc.)
SHOT VOLUME	<ul style="list-style-type: none"> - Set the initial cooling time - Set a zero hold time and/or pressure - Inject incomplete parts by gradually increasing the shot volume using an average to high injection speed - When the mold is almost filled (90 to 95%), set the initial hold pressure and gradually increase the hold time - In this way, the end of the filling is done under constant pressure and part over-packing is avoided
HOLD	<ul style="list-style-type: none"> - Adjust the hold phase parameters to obtain a constant part weight and the required dimensional stability
COOLING	<ul style="list-style-type: none"> - The cooling time depends on the part geometry - Gradually adjust the cooling time until the optimal cycle time is obtained

What to do if ...

OBSERVATION	POSSIBLE CAUSES	POSSIBLE REMEDIES
<i>... the part or the sprue remains jammed in the mold</i>	Insufficient draft angle	<ul style="list-style-type: none"> - Try the corresponding lubricated grade - Check the draft angle and surface finish
	Over-packing	<ul style="list-style-type: none"> - Optimize the position of the switchover point - Reduce the hold pressure and/or the hold time
	Mold temperature	<ul style="list-style-type: none"> - Increase mold temperature to the recommended value
<i>... stains appear on the parts and/or on the mold</i>	Moisture pickup	<ul style="list-style-type: none"> - Dry the product (see other side)
	Material degradation	<ul style="list-style-type: none"> - Reduce the material temperature
<i>... the part surface appearance is poor</i>	Premature freezing	<ul style="list-style-type: none"> - Increase the mold temperature - Increase the injection speed or adapt the injection speed profile
	Hold	<ul style="list-style-type: none"> - Increase the hold pressure
	Jetting	<ul style="list-style-type: none"> - Adjust the injection speed through the gate
	Burns	<ul style="list-style-type: none"> - Reduce the last injection speed and check the venting
<i>... the part is not filled</i>		<ul style="list-style-type: none"> - Increase the shot volume - Increase the injection pressure and speed and/or the hold pressure - Increase the material temperature
<i>... problems continue</i>		<ul style="list-style-type: none"> - Contact us!

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