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General recommendations for injection molding IXEF® compounds

(Standard grades)

EQUIPMENT

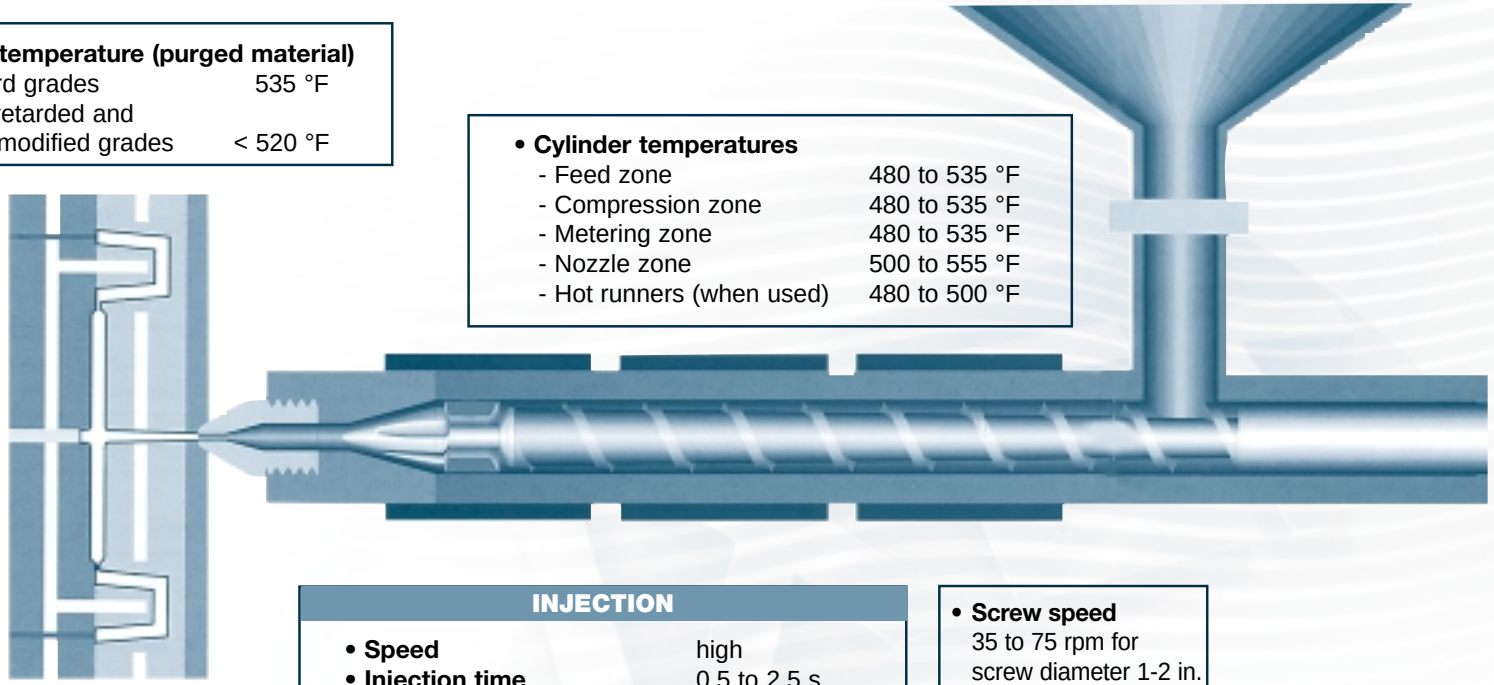
- **Conventional equipment for molding thermoplastics**
- **Screw characteristics**
  - Compression ratio 2 to 3
  - L/D ratio 15 to 20
- **Check valve**
- **Insulation plates** (between machine platen and tool)

DRYING

Recommended for bags open longer than 24 hours

- **Hot air drying**
  - Temperature 175 °F
  - Duration 12 h
- **Desicant drying**
  - Temperature 250 °F
  - Duration 4 to 5 h

- **Material temperature (purged material)**
  - Standard grades 535 °F
  - Flame-retarded and impact modified grades < 520 °F



- **Cylinder temperatures**
  - 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

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 x e^2 s

INJECTION

- **Speed** high
- **Injection time** 0.5 to 2.5 s

HOLD

- **Hold pressure** 4350 to 22000 psi
- **Initial hold time (1)** 3 x e s

- **Screw speed** 35 to 75 rpm for screw diameter 1-2 in.
- **Back pressure** 0 to 150 psi

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

SOLVAY

Injection conditions for IXEF® compounds

(Standard grades)

General recommendations

TEMPERATURE	- 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	- 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	- Adjust the hold phase parameters to obtain a constant part weight and the required dimensional stability
COOLING	- 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
... the part or the sprue remains jammed in the mold	Insufficient draft angle	- Try the corresponding lubricated grade - Check the draft angle and surface finish
	Over-packing	- Optimize the position of the switchover point - Reduce the hold pressure and/or the hold time
	Mold temperature	- Increase mold temperature to the recommended value
... stains appear on the parts and/or on the mold	Moisture pickup	- Dry the product (see other side)
	Material degradation	- Reduce the material temperature
... the part surface appearance is poor	Premature freezing	- Increase the mold temperature - Increase the injection speed or adapt the injection speed profile
	Hold	- Increase the hold pressure
	Jetting	- Adjust the injection speed through the gate
	Burns	- Reduce the last injection speed and check the venting
... the part is not filled		- Increase the shot volume - Increase the injection pressure and speed and/or the hold pressure - Increase the material temperature
... problems continue		- Contact us!

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