

# Extrusion Conditions for PEBAX®

Thanks to its rheological properties Pebax allows many possibilities of extrusion and coextrusion :

- Films (down to  $10\mu$  ) in either cast or blown process
- Sheet
- Tubes

<b>Pebax® Grade</b>	<b>Recommended Temperatures</b>
<b>7033</b>	<b>220°C - 250 °C</b>
<b>6333</b>	<b>210°C - 240 °C</b>
<b>5533</b>	<b>210 °C - 230 °C</b>
<b>4033</b>	<b>210 °C - 230 °C</b>
<b>3533</b>	<b>190 °C - 220 °C</b>
<b>2533</b>	<b>170 °C - 210 °C</b>

# Injection Molding Conditions for PEBAX®

The superior properties of Pebax® allow :

- Wide range of processing temperatures
- Very thin wall thicknesses
- Accurate dimension control
- Short cycle time due to fast crystallization

<b>Pebax® Grades</b>	<b>Recommended Temperatures</b>	<b>Mold</b>
<b>7233</b>	<b>240 - 280 °C</b>	<b>20 - 40 °C</b>
<b>7033</b>	<b>240 - 280 °C</b>	<b>20 - 40 °C</b>
<b>6333</b>	<b>240 - 280 °C</b>	<b>20 - 40 °C</b>
<b>5533</b>	<b>240 - 280 °C</b>	<b>20 - 40 °C</b>
<b>4033</b>	<b>200 - 240 °C</b>	<b>20 - 40 °C</b>
<b>3533</b>	<b>200 - 240 °C</b>	<b>20 - 40 °C</b>
<b>2533</b>	<b>180 - 220 °C</b>	<b>20 - 40 °C</b>

# PEBAX® Coextrusion/Over Molding Compatibility

Insert Resin or Minor Component	Overmolding, Coextruding or Alloy Component Resin					
	2533	3533	4033	5533	6333	7033
<b>2533</b>	G	G	G	G	G	G
<b>3533</b>	G	G	G	G	G	G
<b>4033</b>	G	G	G	G	G	G
<b>5533</b>	F	G	G	G	G	G
<b>6333</b>	F	F	G	G	G	G
<b>7033</b>	F	F	G	G	G	G
Polyamide 11&12	F	F	G	G	G	G
Polyamide 6	P	P	P	P	P	P
Polycarbonate	G	G	G	G	G	G
Plasticized PVC	G	G	G	G	G	G
Rigid PVC	G	G	G	G	G	G
Polyurethane	G	G	G	F	F	F
EVA (28% VA)	G	G	G	G	G	G
EPR (Maliated)	G	G	G	G	G	G
Carboxyl NBR	G	G	G	G	G	G
Leather	G	G	G	G	G	G
Compatibility :	G = Good		F = Fair		P = Poor	
Note : The General Trends in Alloy, insert Molding and Coextrusion Compatibilities Described Above May Vary Depending on the Specific Processing Parameters and Additives Used						

# Preparing Pebax® for Processing

## Drying

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**Pebax® granules are packed in sealed 25 kg bags with a moisture rate  $\leq 0.15\%$  for 33 series grades, and are ready for use. Like most other thermoplastics they are prone to absorbing a certain amount of moisture from the ambient air. In practical terms, moisture levels should be kept below 0.2%. The Pebax® bags should be brought to the processing plant's temperature by being stored there for a minimum of 24 hours before opening as this will prevent condensation of the ambient moisture.**

**It may sometimes be necessary to dry the material before use. For example, any Pebax® bags which have not been used within one hour of opening must be oven dried in the conditions described below.**

**Drying time depends on the rate of moisture pick-up of the granules to be dried. Unsuitable conditions can lead to product deterioration through molecular chains breaking up. This is usually reflected in a change of color and a loss of mechanical properties.**

Pebax®	Hot air oven		Vacuum oven	
	T (°C)	Duration (h)	T (°C)	Duration (h)
2533	60	6 – 8	60	6 – 8
3533	60	6 – 8	60	6 – 8
4033	65	6 – 8	65	6 – 8
5533	70	5 – 7	70	5 – 7
6333	70	5 – 7	70	5 – 7
7033	75	4 – 6	75	4 – 6
7233	75	4 – 6	75	4 – 6

The following three drying methods, which are normally used by processors, are suitable for drying Pebax®.

### **Propelled air oven**

The simplest – and yet efficient – model of this type of oven consists of a perforated drum. The granules are placed inside the drum and a flow of hot air is blown through the granules from the bottom to the top. If the temperature shown in the above table is exceeded, contact with oxygen from the air may change the color of the product. To be effective, this oven requires the air to circulate efficiently. Hence the need to ensure that neither inlet grids nor outlet valves are clogged up or blocked.

## Dehydrated hot air oven

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Hot air is first dehydrated before going through the mass of granules. Because of higher costs, this type of equipment is normally only appropriate when significant quantities of Pebax® need to be dried.

## Vacuum oven

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This rather more costly equipment than the propelled air type is not essential. The absence of oxygen, however, does mean that higher drying temperatures may be used without affecting the color of the Pebax®, and drying time may therefore be cut down.