



## Profile Extrusion Process Guide For Cereplast Compostables®

Cereplast Compostables® resins are renewable, ecologically sound substitutes for petroleum-based plastic product, replacing nearly 100% of the petroleum-based additives used in traditional plastics. Cereplast Compostables® resins use polymer and additives derived from starch and other renewable resources chemistry. These components are carefully blended together in state-of-the-art compounding equipments.

All Cereplast Compostables® resins are certified as biodegradable and compostable in the United States and Europe, meeting BPI (Biodegradable Products Institute [www.bpiworld.com](http://www.bpiworld.com)) standards for compostability (ASTM6400D99, ASTM6868) and European Bioplastics Standards (EN13432).

### **PROCESSING INFORMATION**

Cereplast Compostables® resins can be processed on conventional extruders. The material is stable in the molten state, providing that the drying procedures are followed. It is recommended to start with a clean machine

Extrusion Processing Parameters	Fahrenheit	Celsius
Feed Throat	290-325	145-160
Feed Zone	310-345	155-175
Middle Compression Zone	325-340	160-170
Front Metering Zone	330-345	165-175
Die and Adapter	330-345	165-175
Melt Temperature	390	200
Material Drying Temperature	100-120	40-50
Material Drying Time	4 Hours	
Screw Speed	20-100RPM's	

(These are recommended starting parameters for the manufacture and will need to be optimized to suit your operation)

*Start with “clean machine” – using either general purpose polystyrene or polyethylene as purge compound – before and after extrusion processing*

## **DRYING**

Some extrusion grades of Cereplast Compostables® resins are amorphous and drying is critical to a successful process.

Cereplast Compostables® are hydroscopic and will absorb a small amount of moisture from the atmosphere. The amount absorbed will depend on the environmental conditions, and the temperature and humidity of the storage area. In-line drying is recommended with Cereplast®. Standard closed loop desiccant based column driers work best. A moisture content of less than (400 ppm) is recommended to prevent viscosity and property degradation. The dew point of the air at the input of the hopper should be -40 °F or lower.

## **MACHINE CONFIGURATION**

Cereplast Compostables® will process on conventional equipment. A general purpose screw designed to minimize residence time and shear works well.

Cereplast Compostables® resins are true thermoplastic, meaning that processing needs to be done below decomposition temperature, which will occur about 250°C (480°F) and above. Avoid temperatures above 220°C (430°F) (unless need to effect processing).

Cereplast Compostables® resins process readily if the proper equipment, streamlined tooling and recommended running conditions are used.

Cereplast Compostables® resins have reasonable wide range for process – each process behaves slightly different. Recommend starting at the lower settings then working up on temperature until optimal process behavior is achieved. Temperature profiles vary depending upon the output, melt temperature and screw speed.

The dies must be optimized such that a uniform flow rate is obtained over the entire die orifice and "dead spots" in the die are avoided.

Defined moisture content in the material should not be exceeded for processing. Excessive moisture content is indicated by streaks, a foam structure or a rough surface of the profile.

A variety of screw designs can be used. Low compression screw with 24/1 or greater L/D run best. A screw tip designed to minimize melt inventory and avoid stagnation are preferred.

A streamlined die is preferred. Avoid sharp angles, corners and blunt obstructions.

Regrind can be used up to 30% as long as it is kept clean and dried.

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