



## Extrusion Coating 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® can be processed on conventional extruders and coating equipment. The material is stable in the molten state, providing that the drying procedures are followed. It is recommended to start with a clean machine.

<b>Extrusion Processing Parameters</b>	<b>Fahrenheit</b>	<b>Celsius</b>
Feed Throat	290-325	145-160
Feed Zone	340-370	170-187
Middle Zone	385-450	195-230
Front Zone	460-500	237-260
Die and Adapter	475-510	245-265
Melt Temperature	475-510	245-265
Material Drying Temperature	150-170	65-75
Material Drying Time	2-4 Hours	
Screw Speed	20-100RPM's	

(These are recommended starting parameters for the manufacture of extrusion coated paper and may need to be optimized to suit operation)

*Start with “clean machine” – Low density polyethylene (LDPE) can be used as purge compound before and after extrusion processing. Other purge compounds that work well are Dyna Purge “F” and polycaprolactone (PCL).*

## **DRYING**

This extrusion coating grade is crystalline and drying is critical and key 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 Compostables®. Standard closed loop desiccant-based column driers work best. A moisture content of less than 100 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® polymers will process on conventional equipment. A general purpose screw designed to minimize residence time and shear works well.

- Recommend start up using barrel temperatures set at the higher limits. These limits can be pushed if required for better adhesion.
- Cereplast Compostables® have a reasonable range for process – each process unit behaves slightly different. Material must be keep moving at the upper limit temperatures. Keep material moving thru the machine and do not let the machine sit idle at processing temperatures. Since the processing is done near the decomposition point, the material must be purged out of the system at shutdown and at the end of run.
- Specific coating techniques are incumbent on end user to determine, since each process varies.
- Cereplast Compostables® have a lower glass transition/heat deflection temperature than polystyrene or polypropylene. Extrusion rates should be similar to PE. Storage of finished articles should in an environment that minimizes exposure to heat, moisture and humidity. Storage temperature should be below 40°C (105°F).
- Pretreatment of paper is recommended (corona or flame treat). Keep paper warm if possible.
- Low shear screws are recommended. Avoid any high shear environment in the system.
- Chill rolls should be kept warm (above ambient). Use crowned rolls if available.
- Air or die gap should be as small as possible (30 mil/750 micron).
- Set nip roll pressure high to affect melt pressed into sheet.

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