



Preheat Compression Molding Startup Procedure For Phenolic and Melamine-Phenolic Molding Compounds

Before setting a mold into a press, it is necessary to estimate an appropriate press size for that mold. To determine the press size, multiply the projected area of the part at the parting line by 27.6 MPa (4,000 psi). In other words, the mold must fit between the tie bars, and the clamping tonnage should be approximately the amount determined by the above formula. A press that lacks sufficient clamp tonnage will result in parts that are heavily flashed and not well packed. These parts may have less than data sheet values physically and electrically and their appearance may also be questionable. However, if a mold that is designed to run in a press with a clamp tonnage of 75 tons is set in a press with a clamp tonnage of 400 tons, it is quite possible that significant damage will be done to the mold itself.

Once a mold has been matched with a press and is installed in that press, a standard procedure should be followed to begin molding parts. Following a written procedure each time a mold is installed makes it easier for the press operators, by helping to minimize potential accidents and prevent the omission of any procedural steps. After the mold is set, the following startup procedure can be implemented.

1. Turn on the heat and frequently check the temperature of the molding surfaces with a calibrated pyrometer and surface probe. **PLEASE NOTE:** The temperature should be relatively uniform across the entire molding surface. Typical start up **mold temperatures** are:
 - 165°C - 182°C (330°F - 360°F) for phenolic molding compounds
 - 150°C - 177°C (300°F - 350°F) for melamine-phenolic molding compounds
2. Check the **preheat temperature** of the material being loaded into the mold. It should be 104°C- 115°C (220°F - 240°F) for both phenolic and melamine-phenolic materials.

It is to be measured by taking an extruded slug or a preheated preform and probing it 2 or 3 times using the needle probe of a calibrated pyrometer. The preheat temperature should always be rechecked after any changes are made to the process.

3. If you are using a **preplasticizer** to preheat the material, the screw RPM in most cases should be 60 or less. A faster RPM may not allow the material to be picked up as well and the result will be the same as running at a slower RPM. In addition, running at a slower screw speed usually produces a more uniform stock temperature and a more consistent shot weight.
4. When using a **reciprocating screw preplasticizer**, the back pressure should be set at about 0.3MPa (50 psi).
5. Just prior to charging the cavities with material for the first shot, the mold should be **completely waxed**. Carnuba wax works well for this purpose. To wax a mold, melt the wax on the molding surface and with the aid of a small natural bristle paintbrush, spread it over the entire molding surface, getting it into every pocket and corner. Remove any excess wax from the mold surface.
6. Please note, in some instances the use of a breathe cycle may be necessary. Its timing and duration will be dependent on the mold, press and molding material.
7. The molding parameters should be adjusted to produce good parts from all cavities, each shot. Typically, the mold close time should be 3 - 8 seconds.
8. After an acceptable molding process is established, it should be capable of continuing without change for many hours.

Date Printed: April 22, 2008

Date Revised: September 28, 2007

Supersedes Revision Dated: April 4, 2001

This information is suggested as a guide to those interested in processing Plenco Thermoset molding materials. The information presented is for your evaluation and may or may not be compatible for all mold designs, press configurations, and material rheology. Please feel free to call Plenco with any questions about PLENCO molding materials or processing and a Technical Service Representative will assist you.