



Cycletime Tips - General

Volume 2: Basic Tools for Troubleshooting Plastic Processing

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In troubleshooting plastic processing, you will need some basic tools to perform the job correctly and effectively.

Pyrometer:

A temperature measurement instrument with an immersion probe and a surface probe. It has a minimum range of 0°C to +537°C (32°F to 1000°F), accuracy of $\pm 2^\circ\text{C}$ (3.6°F) or better, and a response time of 5 seconds or better. An infrared unit is not recommended for use in troubleshooting an injection process. An infrared can be useful in checking the melt in an extrusion process. The probes should be preheated to approximately 30°F higher than the temperature being checked. You will get your best and quickest readings by preheating the probes for 30 seconds. Safety recommendations for checking an actual melt temperature:

1. Wear a pair of heat resistant gloves to protect your hands. The gloves should not be tight fitting as to prevent easy removal.
2. Wear safety glasses.

Dew Point Meter

A meter for measuring dryer performance (dew point). It has a minimum range of -40°F to +30°F (-40°C to +9°C). A dew point meter measures the moisture content and calculates the dew point temperature. Dew point temperature is explained as follows: Warm air can hold a lot of moisture, but as air temperature drops, so does its ability to hold moisture. At some point the air becomes saturated, and dew forms. That point is called the dew point temperature of that air sample. For example, a reading -30°F means that the actual air temperature would have to drop to -30°F before moisture in the sample would form dew. For best results a dew point reading should be taken at the air inlet to the hopper. Give the meter at least 20 minutes to react. The meter should be checked before use with a pre-dried hygrosensor (generally a tube filled with desiccant) that is capable of a -40°F reading.

Moisture Analyzer:

An instrument to measure the actual moisture content of a material.

Stop Watch:

A digital is easier to read and thus more accurate than a mechanical stop watch. It should time to the hundredth of a second (0.00 sec.).

Flow Meter:

Measures the amount of cooling water flow through the tool cooling channels.

Note Pad/Note Book:

Keep a book to record items checked, changes made and results of change. It is advised that a copy of the Process Conditions Sheet/Log be handy to verify that the process conditions are set to the correct settings.

Patience:

Be patient, don't jump to conclusions. Take your time and get the facts. Analyze the data you gather. If you need to contact a General Polymers Technical Service Representative for assistance, you need to have some basic information at hand before you call:

1. Actual melt temperature.
2. Tooling temperatures.
3. Material description (type/manufacture/color)

Example: Dow magnum 9010 White

Monsanto Vydyne 909 Black

What is the problem, be specific.

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