

Application Note for Plastic Granules Moisture Measurement



PCE Americas Inc.
711 Commerce Way
Suite 8
Jupiter
FL-33458
USA
From outside US: +1
Tel: (561) 320-9162
Fax: (561) 320-9176
info@pce-americas.com

PCE Instruments UK Ltd.
Units 12/13
Southpoint Business Park
Ensign way
Hampshire / Southampton
United Kingdom, SO31 4RF
From outside UK: +44
Tel: (0) 2380 98703 0
Fax: (0) 2380 98703 9
info@pce-instruments.com

www.pce-instruments.com/english
www.pce-instruments.com



More and more industrial manufacturers replace product parts being made of metals to plastic parts by injection molding. Before processing the moisture has to be brought out. To result in high plastic product strength, long polymer chains are needed. Short chains are easier to inject, but it leads to a lower product strength. So all granules should be dried - water free. It is not as easy to dry all moisture out (atomic water ever stays inside). Also some plastics as polyethylene is a kind of porous and lets water through (the humidity migrates through the resin wrapping and the moisture contaminates the granules).

Especially some long chained resins are hygroscopic (polycarbonate, urethanes, polyethylene, polystyrene). After the high temperature drying process the hygroscopic character is decreased, but not completely gone. Directly when the resins come out of the oven, it begins again: moisture vapor is adopted by the plastics. Therefore the injection moulding process must be done in the shortest time possible. Other resins, for example ABS, can be processed in "wet format". But during the processing chemical reactions cause problems.

So in general the moisture must be brought away / dried out and then the material must be processed quickly. To have the correct and trustable knowledge about the plastics resin moisture the moisture analyzer is a perfect tool. It carries out the moisture content of the test material in a few minutes. All standard reference methods are not very trustable (take to long or are inaccurate). The instrument accuracy is very important, because some resin manufacturers recommend resin moisture contents below 0,2 %. So the moisture analyzer helps the plant workers three times. First, when the granules are bought from the material manufacturer. When checking the incoming material on moisture content, you can only pay for resins and not for the moisture carried with material. Second, when checking the moisture content with a moisture analyzer before the drying process, you can adjust the drying process properly and you can save lots of money (drying is an expensive process). Third, after having finished the resin drying process to check for the best injection mould processing moisture content.

In general the moisture analyzer is the first choice in resins moisture content measurement.