

Plastic Times

Importance of drying while processing plastics resins

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Importance of Drying while Processing Plastics Resins

Dec-2008:

Plastics are being increasingly used, today, in automobiles, food packaging, consumer durables, office automation equipment, health and medical products... the list endless, because of their sheer versatility and flexibility.

Plastics are light in weight, do not rust or corrode, have a high impact strength, are heat resistant, can be produced in attractive colors and molded into stylish shapes. These are few of their properties which make them so popular with all manufacturers.

Criteria for Zero Defect Processing:

The most important and critical factors in processing engineering polymers is that the material should be nearly free from moisture to avoid processing problems and defects in the final products like splash, silver streaking, voids, haziness along with loss of impact and tensile strength, uneven coloring etc. become inherent resulting in the loss of the very characteristics for which plastics are preferred and, above all, rejection of finished parts.

Drying is the necessary criteria for quality processing of engineering plastics:

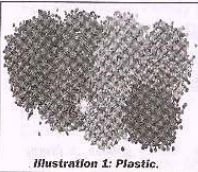


Illustration 1: Plastic.

Engineering polymers/resins like Nylon, PET, Polycarbonate, ABS, PBT etc., which have a large usage in almost industries mentioned earlier have an extremely high affinity for moisture and need to be dried thoroughly and properly to ensure quality finish of final product.

Improper and inadequate drying can result in loss of structural, impact strength and tensile strength, cosmetic defects and many other moisture related defects and deficiencies. In fact the very characteristics for which plastics are known for.



Illustration 2: PET

These resins absorb moisture during manufacturing, transportation and when in storage prior to processing. It can be safely assumed that all batches of resins potentially contain surplus/excessive moisture, regardless of the circumstances.

Thus, the need for drying PET, Nylon, Polycarbonate, ABS and Acrylic is very stringent as these.

For example, PET resins absorb moisture very easily and comparatively more quickly than other plastic resins. This affinity of PET resin to moisture makes it one of the most difficult resins to dry. During processing the presence of moisture breaks the polymer chains, leading to reduction in the molecular weight i.e. drop in IV, which results in hazy appearance of the finished product. The traces of moisture present in the resin can result in splay, internal bubbles, loss of clarity and strength in the finished part/product.

Hence, proper drying of resins is the first critical step towards the final required quality of the molded product. Drying requires stringent control over dew point, drying temperature, residence time and flows.

Bry-Air Dryers have been providing zero defect drying of resins before the polymer processing thus ensuring the requisite quality of final components decades.

Drawing on its long experience in drying various types of plastics resins, especially PET, Bry-Air's honeycomb based Resin Dryers, introduce a few months ago, is a major breakthrough in technology and a giant leap in resin drying.

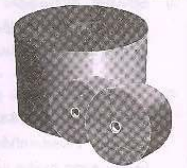


Illustration 3: Honeycomb Rotors.

They are designed to deliver highest drying efficiency (upto -65 degree C dewpoint) at lowest energy costs, almost 25% energy saving.

Resins can get contaminated while being manually conveyed and it is best to use a centralized conveying system along with the Dryer to ensure minimum rejects, shorter production cycles and the final product quality.

Bry-Air supports the industry with state-of-art centralized conveying systems and its next generation honeycomb dryers.



Illustration 4: BHD Series Resin Dryer

— By Courtesy: Ms. Kanika Mittal- Perfect Relations Ltd.