Humidity Control for Printer Roller Drum- Manufacturing, Storage & Packaging

The Printer Roller Drum is an aluminum cylinder coated with a layer of non-toxic, organic-photoconductive (OPC) material. The OPC material becomes electrically conductive when exposed to light. During the printing process, a laser beam traverses the surface of the OPC drum and selectively discharges parts of the surface. It thereby composes a latent, electrostatic image on the drum. The developing process then changes the latent image into a visible image by depositing negatively charged toner particles on the exposed areas of the drum. Hence the quality of the surface of the OPC drum is a significant determinant of print quality.

Effects of Uncontrolled Humidity

The OPC drum is the most expensive part of the toner cartridge and drives the entire print process. Extreme temperature and humidity changes/deteriorates the surface coating of the OPC drum.

Dip coating is generally employed for the manufacture of drums. Presence of humidity affects the thickness and non-uniformity of the charge transport layer results in non-uniform photo sensitivity.

Causes of Uncontrolled Humidity

A black coured moisture repellent polythene is used in packaging of printer drum

The moisture present in the production and packaging is the main factor contributing to the defects as it contain components that are sensitive to light, temperature, and humidity. Along with the ambient conditions, presence of humans also contribute a much to atmospheric moisture, as human breath do contain a considerable part of moisture in them.

General Recommendation

Dew point to be maintained is -30ºC at room temperature.

Bry-Air Solutions

Bry-Air's recommendation is to install a Bry-Air Desiccant Dehumidifier, since they are capable of maintaining dew point as low as -60ºC, regardless of ambient conditions and thus maintain the ideal environment conditions required for uniform coating of roller drums during dip coating