

POLYMER COATINGS

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What is polymer coating?

- Polymer coatings are coatings or paint made with polymers that provide superior adherence and protection from corrosion.
- The polymer coating process applies an elastomer or other polymeric material onto a supporting substrate.

- Examples of polymer coatings include:
- Natural and synthetic rubber
- Urethane
- Polyvinyl chloride
- Acrylic, epoxy, silicone
- Phenolic resins
- Nitrocellulose

Why is it important?

The polymer coatings greatly benefit your office and/or home materials. The reason why is because they provide your materials wonderful protection from corrosion. It is essentially a paint that shields the material from harmful conditions. Any of the polymeric coatings made for corrosion protection are typically tough. This allows them to be applied to heavy films. They should never degrade due to heat, chemicals, moisture or salt.

Coating Methods

There are several types of coating methods, some of them are given below.

➤ Melt coating

➤ Reaction coating

➤ Dyes

➤ Rotating coating

➤ Electrophoretic coating

Melt Coating

In this group, the polymer melted is deposited as a film on the surface of the material to be coated. In this method, the polymer is mixed with various additives and put into a container and melted. The cold material to be coated is immersed in the melt, removed and dried.

The fluidized bed coating given in the figure below is also in this group. In the fluidized bed coating, 50- 100 microns powdered polymer is put into the bed and fluidized with the inert gas flow. The material to be coated, which is subjected to preheating, is immersed in the bed.

Reaction Coating

This group of coating methods covers the surface of the monomer, polymer, material as a result of a chemical reaction. An example of this coating is coating with epoxy resin in the fluidized bed. Here, a solid polymer crosslinked by a chemical reaction is formed on the surface of the material using the resin hardener and the material surface is coated.

Dyes

In this group of coatings, a polymer solution or coating liquid is prepared, which is prepared as colorants. These prepared materials are dyes with a more common definition. The polymer solutions are spread over the surface to be coated by a brush or spray gun. The coating is then carried out by evaporation of its solvent.



Rotating Coating

Coating or molding can be done with rotating systems. In this method, the material to be coated is connected to a mechanism that can rotate and the polymer is placed in it and heated by rotating it.

The steps for either coating or molding with this method are given below.

1. A certain weight of the polymer is taken and put into the mold.
2. The mold is placed in an oven and rotated on the vertical and horizontal axis while heating at 230-400 ° C.
3. Mold is taken to a cold environment and cooled with water or air.
4. The mold is opened or the material to be coated is removed from the environment.

Electrophoretic Coating

This method is a method into methods such as electroplating, cathodic electroplating, anodic electroplating, and electrophoretic painting. This method is based on the migration of particles suspended in a liquid by an electric field effect. This migrating material can be polymer or metal. The polymer is called a polymer coating, and metal is called metal coating.

Usage Areas

Polymer coatings can be applied to metals, ceramics as well as synthetic materials. They are temperature-resistant up to approximately 280°C and FDA-approved and are therefore used primarily for food production (e.g. containers, multi-head scales, frying pans).

References

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