

Powder coating is a dry coating process used as a metal finish mostly on industrial equipment. Powder coating is applied as dry powder through an electrostatic process, then cured with heat. It is well known for providing high-quality finishes in terms of both functionality and overall look.

The powder coating finishes are not only sturdy but flexible as well. It can be used on different surfaces, including metal, concrete, steel, and plastic. It's suitable for both indoor and outdoor applications, and it's one of the most cost-effective finish options.

There are two types of powder coating, thermosets and thermoplastics.

Thermoplastic powder coating finishes become liquid and very soft when heated. This eliminates chemical bonding. This process makes the powder coating both reversible and reusable.

Thermoplastic coatings tend to be thicker, and hence more durable compared to thermoset coatings. For this reason, they can be used for a plethora of things from metal, auto parts, and even refrigerators.

On the other hand, thermoset powder is quite different in the fact that it forms chemical bonds once cured, making it impossible to recycle it. It is suitable for high heat areas because the bonds prevent it from melting away. This type is much cheaper compared

to thermoplastic.

Powder coating is based on polymer resin combined with pigments, curative, flow modifiers, leveling agents, and several other additives. All ingredients are melt mixed together, then cooled and ground into a powder. Preheating achieves a uniform finish, and cooling helps form a hard coating.

The powder coating process eliminates overspray wastage that may be experienced with solvent-based paints. Powder coatings are different from paint in the fact that they need an electric charge to work, while paint needs an adhesive.

An electrostatic paint sprayer is used for the application process. It imparts a positive electric charge on the powder and accelerates it towards the components through an electrostatic charge. The chemical bonding process strengthens the powder coating because once cured, the bonds solidify.

One of the most significant advantages of using powder coatings is that once solidified, more layers can be added if thickness is desired. Thicker coatings mean longevity and increased protection. Powder coatings are suitable for metal because they repel corrosive materials, such as chemicals and water.

This is hands down one of the most durable coatings you could use as a finish for a variety of surfaces, not just metal. The chemical

bonds give a superior coating that makes it suitable for both machinery and everyday items. It holds well to extreme weather and physical impact, meaning it's resistant to scratches, abrasions, and chips.

The longevity of the product will highly depend on several factors. These factors include the quality of preparation, type of powder coating used, and the environment in which the product is exposed. Powder coating finishes can last up to 20 years, but due to the consistent use, exposure to UV light, and outdoor environment may break it down faster.

Different coatings also have varying lifespans. For instance, coatings that have fluoropolymers and urethanes can last longer. They are designed to withstand extreme conditions and are better suited for outdoor products. Epoxy coatings, on the other hand, may last very long indoors, but once exposed to the outdoors, they break down a lot faster.