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PVD Finish

Physical Vapor Deposition - also known as PVD Coating - refers to a variety of thin film deposition techniques where solid metal is vaporized in a high vacuum environment and deposited on electrically conductive materials as a pure metal or alloy coating.

As a process that transfers the coating material on a single atom or molecule level, it can provide extremely pure and high performance coatings which for many applications are much preferable to electroplating. PVD Coating processes are an environmentally friendly process that can greatly reduce the amount of toxic substances that must be disposed of with more conventional types of coating that involve fluid precursors and chemical reactions.

Physical Vapor Deposition Coatings are also highly resistant to tarnishing and corrosion enabling them to be used for a wide range of decorative finishes with colours that do not fade. PVD produces highly brilliant finishes that make watches highly resistant to scratches and scrapes, and is used in a wide variety of optical applications ranging from glasses to self-cleaning tinted windows. Their resistance to corrosion makes them widely used on household items such as door handles, plumbing fixtures and marine fixtures.

PVD is fundamentally a vacuum coating technique vaporizing a metal to a plasma of atoms or molecules and depositing them on a wide range of substrates. Carried out in a high vacuum chamber approximating outer space at 10-2 to 10-4 millibar, the process usually takes place between 150 and 500 Degrees C.

The material to be coated is secured in a fixture and placed in the vacuum deposition chamber. The equipment is pumped down to the optimum pressure depending upon the coating materials, substrate and process used, and the object to be coated is often preheated and sputter cleaned.

To achieve a uniform thin film coating thicknesses that are often a few atoms or molecules thick, parts to be coated are often rotated on several axis at a uniform speed, or placed on conveyor belts moving past the deposition material's plasma stream. Single or multi-layered coatings can be applied during the same deposition cycle.

Of all the benefits of the PVD Coating process that produce some of the toughest, most brilliant and cutting edge technology of our time ranging from microchips to solar panels, none is more important than the fact that PVD Coatings can be applied with no toxic residues or by-products which degrade our planet's environment.