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Coating Guidelines for Precision Components

(Tool Steels, Mold & Die Parts, Steels, Stainless Steels, Carbides)

Process Temperature

- Parts are heated to 475 °C, (890 °F) for 3 – 6 hours depending on the part size and process.
- Tool steels (such as A2, D2, S7, H13 and P20) should be triple tempered at 950 °F (minimum) to ensure dimensional and hardness stability at the coating process temperature.

Thickness

- 2 – 3 microns is the typical coating thickness.
- Three microns of coating is approximately 0.00012" on each surface.

Assemblies & Hardware

- All assemblies must be taken apart prior to coating. All bolts, screws, dowel pins, split pins and hardware must be removed prior to coating to ensure no oil or grease is trapped. Even pressed in fittings must be removed.
- Swiss-Tek will clean all holes and clean the parts to prepare the surface for coating.

Coating Coverage

Line of sight

- The coating is applied in a vacuum chamber by vaporizing a metal at high temperature and extremely low pressure. The tools are rotated and given a negative charge which attracts the positively charged coating vapor. The coating is not sprayed or dipped.
- Parts must have a way to be fixtured in order to hold them in the coating chamber. Common fixturing can be a cylindrical holder, small magnets, wire or just placing the part on a plate. In all of these cases there will be some portion of the part that is not coated. In order to achieve true 100% coverage the part must be coated twice.

Holes & Threads

- The coating will penetrate into a hole to a depth of approximately 1x its diameter.
- Threads can be coated. Due to the thin coating the threads should function normally.

Masking

- Due to the high temperature all masking must be done with steel fixtures or stainless steel foil. Masking charges will be added as required.

Stripping of Coatings

- Coatings can be stripped off of high-speed steel with little or no harm to the steel substrate. It is very challenging to strip PVD coatings off of carbide without causing leaching of the cobalt binder. Please note that ZrN, CrN, and CBC *cannot* be stripped off of steel or carbide. Please inquire about Swiss-Tek Coatings' stripping services.

Existing Surface Treatments

- For best coating performance we suggest parts have a bright finish prior to coating.
- Parts should be free of rust, paint and black oxide. Our cleaning process will remove grease and oil.

Brazed Parts

- Due the high temperature and extremely low pressure the tools experience during the coating process all braze must be Cadmium and Zinc free.

Recoating

- Most coatings can be recoated over several times. Previous coatings can affect adhesion of the new coating and may result in some cosmetic flaking. Please call for recommendations.
- Salvaging undersized parts by multiple coatings is not recommended.

