

GOOD HOUSEKEEPING IMPROVES COATINGS

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There are many reasons why our coating processes don't work exactly as planned. Some of these reasons are very technical and others are as basic as the need to clean our floors more often.

As a practical matter, it is impossible to keep a plastic surface clean during its forming period. Many parts need to be machined, trimmed, deflashed, or otherwise handled prior to metallizing. These processes often leave parts coated with dirt, oil, or dust. Part surfaces become contaminated during storage, shipping, or transfer through a dirty production area. This means we may need to clean our parts prior to metallizing.

There are three basic cleaning processes:

- 1) Pressure washing with water and detergents. This is a common cleaning process and should be combined with an effective drying system.
- 2) A more expensive method is solvent degreasing. It can be done as a straight immersion, with or without ultrasonic agitation. It can also be done as a condensing vapor. Certain solvents may dissolve certain plastics. See our Tips sheet entitled "Solvent Chart" and talk with your plastic resin supplier before cleaning with a solvent.
- 3) Parts can be cleaned with blasts of compressed air. One caution with this method is that air compressors commonly condense moisture and are lubricated with oil. Air should be dried and filtered before use in this manner. Air can also be blown through an ionizing gun which will eliminate static on the part, reducing the dust and loose dirt on the part surface. Cleaning with air will not remove grease or other filth stuck to the part surface. Use one of the methods discussed above for that type of contamination.

Many plastic parts require a base coat before metallizing to cover mold flaws, die marks, scratches, and other blemishes. This base coat, being the first of a three layer coating, is extremely important. The base coat must properly wet and adhere to plastic parts and provide a smooth finish that will promote adhesion of the metallized layer. Following metallization, a top coat is applied to protect the metallized layer and to impart brilliance to the finished part. The application of base and top coatings is a painting process. The two dominant methods of application are spraying and flow coating.

Dirt in paint or on painted surfaces is defined as any and all contaminants, including lint, dust, small clusters of improperly mixed pigment, tiny particles of overspray paint debris, and oil mist.

Lint is one of the most frequently found paint contaminants. It originates from packaging material (especially cardboard), masking paper, shop cloths, and clothing. Dust is also a very serious problem. Everything attracts dust, and at times it may seem impossible to get rid of.

We can usually trace the causes of dirt in paint or on painted surfaces to poor housekeeping, inadequate facilities, or poor painting practices. Listed below are some precautionary measures that can be taken to insure clean, high quality parts.

It is a good precautionary measure to filter all coatings before use. The supplier may have poor housekeeping habits of his own, allowing dirt or other contaminants into his product. Paints may change chemically over time or partially cure causing small bits of material to be suspended in the coating.

The "painting room" should be converted into a "clean room". Some metallizers convert the metallizing area into a "clean room" as well. Only authorized personnel, wearing lint free outer wear, should only be allowed access in. These people should have to pass through a blow off vestibule before being allowed to enter the clean room. Street shoes should be covered or exchanged for clean shoes. Wet mopping is the preferred method of cleaning floors; sweeping is highly discouraged due to the dust it kicks up. All parts waiting to be painted should be covered to protect them from contaminants in the air. Sheets of polyethylene used as covers are ideal in this situation.

The paint area should also be positively pressurized so that air flows out of, not in from, the doors to the paint area. This will keep dirt from "drifting in" from other areas. Incoming air should always be filtered to keep dust from entering the area. If water wash booths or air exhaust booths are used in the area, make sure the incoming air is of sufficient volume to replace what is being drawn up the stack. Failure to do so will cause dirty air to be drawn in from other areas of the shop. Overspray is a problem most commonly associated with improperly balanced air flow in the spray booth. The problem with overspray is that the tiny overspray particles dry on various objects in the spray booth. As fresh paint is sprayed, the tiny dried particles are dislodged and work their way into the fresh paint and onto painted surfaces. To combat this problem, the air flow regulator should be properly adjusted and regularly checked. The doors on the spray booth must remain closed with access to authorized personnel only. Filters themselves are a problem. They often go too long without being cleaned or replaced. The filters, whether for paint or exhaust, should be regularly checked and maintained per the manufacturer's directions. Failure to do so will cause improper air flow.

A hidden source of dirt in many shops is carbon ash formed by the action of conveyor chains and wheels with the lubricants they require. If not specifically designed to contain this ash, the conveyor may require regular cleaning to reduce this problem. Changing to an "ashless" lubricant may also help.

The paint lines need to be cleaned and checked on a regular basis. Paint lines that are seldom cleaned can be the cause of resin buildup. Resin is a plastic material and is what remains of a coating when it dries. Resin buildup can create problems in line pressure and can also be blown onto the part's surface. Simply flushing the lines with paint thinner will control the problem.

These are a few helpful hints to make your painting process go as smoothly and cleanly as possible. At MTS we know that successful metallizing involves more than high quality filaments and evaporants. If there is a way we can help with your cleaning problems, please don't hesitate to ask.

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