Machine Tool Compatibility - Paint

We paint machine tools for the same reasons that we paint our cars. We want them to look good and protect the metallic surface from corrosion. If we stick with the automobile analogy we can even look at the initial painting of the car before it leaves the factory and then at some later time when the car is older and needs maintenance painting. We, of course, see the same type of pattern with machine tools.

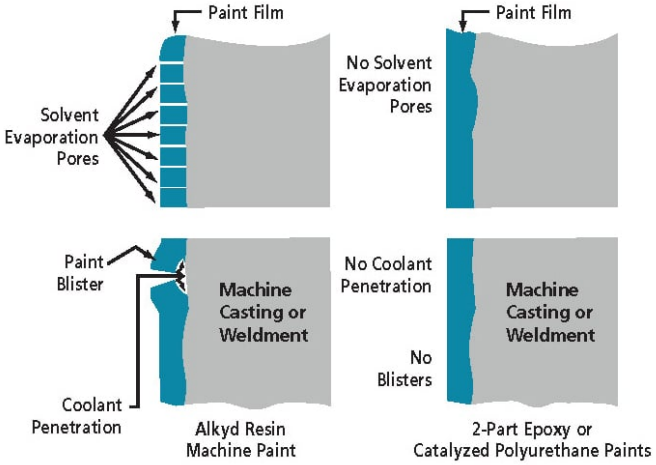
When buying a new machine the paint job is at least an indirect contributor to the decision and it should probably be one of the items on your quality check list.

A bad machine tool paint job not only causes the machine to look bad “before its time” but can cause machine function and parts quality problems. If the paint “sluffs off” or dissolves and is redeposited on parts or the machine, it can cause cleaning problems or machine malfunctions.

There are two key parts to any paint job: the actual selection of the paint, and its application.

On the product selection front at its most basic level there are two types of paints: those that dry by the evaporation of a solvent (mineral spirits, MEK, acetone, water, etc.) and those that dry as the result of a chemical reaction (twopart epoxies and catalyzed polyurethane paints, etc.). From the point of view in painting machine tools this is important because those that dry by solvent evaporation wind up with small “pin holes” in the finished surface of the paint. These holes are approximately the size of the solvent molecule that evaporated through it and the chemical systems drying or setting paints do not get these “pin holes”.

No matter how well the coating is selected, if it is not applied over a clean, properly prepared surface, allowed to dry (either air or special atmosphere) in the proper manner and thickness, the paint system will fail. Read and follow the coating suppliers instructions. For further information and guidance consult the appropriate SSPC (The Society for Protective Coatings) documents and specifications.



Machine Tool Paint Failure Mechanisms:

1. Dyeing or staining the freshly painted surfaces: paint not fully cured before fluid is put in the machine tool or the dye in the fluid was adsorbed into the paint.

2. Large sheets of paint “sluffing off” of the machine: prime coat porous or the tool surface not properly prepared and the fluid “wicks” between the paint and the machine tool surface lifting the paint.

3. Smaller sheets or chips of paint come off the machine: fluid penetrating through the porosity left by solvent evaporation to lift the paint.

4. Paint gets soft and sticky or goes into solution: mutual solvent in the fluid that actually dissolves the paint or the paint was not fully cured.

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