

PAINT APPLICATION

Paint is not a finished product until it has been applied and dried on an appropriate substrate at the designed performance film thickness. Proper application therefore is critical to the performance of the paint system. High performance paint systems are especially sensitive to misapplication and a knowledge of the application characteristics and recommended film thicknesses are vital to obtain optimum results.

Weather Conditions.

Bad weather conditions are a perennial hazard in painting operations. Paint should never be applied on wet surfaces and therefore painting should be avoided not only in rain, sleet and fog but also when high humidities and low steel temperatures lead to condensation. Condensation is very difficult to detect on surfaces and will occur if the steel temperature is below atmospheric dew point. As a general guide, application should not take place when the steel surface temperature is less than 3°C above the dew point.

Extreme temperature too may present problems. At low temperatures (below 5°C), the curing of paints such as epoxies may slow down dramatically and for some paints stop altogether. Others are not seriously affected. The chlorinated rubber and vinyl paints may be used at or below 0°C as long as the surface is free from ice as ice may be present in pores of the steel surface at these temperatures, generally however, painting below 1°C should be discouraged. At high temperatures, solvent loss from paint atomised during application is very rapid, paint droplets do not coalesce on the surface (leading to a porous coat) and clouds of dry spray may also be produced. The problem may be rectified by the addition of thinners but these should never be more than a few per cent of the weight of the paint. Generally, painting should be avoided during extremely hot hours - where paint operations are carried out in hot climates, the paint should be applied in the morning and early evening.

Application methods

Four main methods are used in painting. The choice of method depends on the type of coating to be applied, the effect on adjacent areas and the degree of skill of the personnel.

1. Brush

Brushes should be selected :

- for low viscosity paints to yield low applied film thickness.
- for most primers, particularly where surfaces have tiny irregularities that may be missed by roller or spray or where penetration is especially important.
- for corners, edges and odd shapes.
- for small areas.



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2. Roller

Rollers should be selected :

- for topcoats where the stippled effect produced by roller is acceptable.
- for jobs where skilled brush painters are not available.
- for large flat areas where spraying would create a fire hazard.
- for textured coatings.

3. Conventional Spray

This technique mixes a jet of air with a stream of paint to propel a fan of paint droplets towards a surface. The mix of air with the paint particles gives high turbulence however and considerable “bounce back”. Air atomisation of paint can thus result in considerable overspray. Therefore not only must adjacent areas be protected but paint losses may vary from 20% to 40% on steel and paint operatives must wear protection to avoid paint mist inhalation. The technique particularly suits low viscosity paints and is most commonly used for the application of conventional decorative paints and zinc silicate coatings.

4. Airless Spray.

The technique relies on hydraulic pressure rather than air atomisation to produce the spray. Paint under very high pressures (1000 to 6000 p.s.i., approximately 100 to 400 kg/cm²) is delivered to the spray gun and then forced through a very small orifice to atomise it. There is thus more rapid coverage with much less overspray and much higher film thickness can be obtained.

Most of the products manufactured by National Paints can be applied by airless spray. Some products (e.g. anticorrosives) are designed to be applied at high film build, others (e.g. finishing paints) at low thicknesses. Follow the recommendations in the Product Data Sheets. If the recommendations are significantly exceeded and over-application results, sags and runs may develop, and may have detrimental effects on the performance of the coating.

Finally, it must be remembered that airless spray ejects paint under very high pressure. Do not direct the spray at people nearby as injury can be easily caused and take due precautions when the equipment is being cleaned.