



Proper application of protective coatings is an important criterion in giving the paint system it's required life. Given below are the four main application procedures along with the advantages and disadvantages of each.

Brush Application

Used frequently for decorative paints, in protective coatings this is in vogue in painting complex areas where the use of spray methods would increase the loss factor. However, a word of caution about brush application. It is difficult to achieve a high build by brush application in one coat. The process is relatively slow and may result in a poor finish for thixotropic or high viscosity top coats.

Roller Application

A popular method for decorative paints, it is sometimes also used for protective coatings. Though faster than brush application, it is not easy to control the paint film thickness by this method. Rollers of different nap length are available to suit varying surface roughness. They are not recommended for application of primers since it is difficult to ensure complete wetting of the surface especially when pitted.

Conventional Spray

A widely accepted method of paint application where liquid paint is atomised by an air stream. A correct combination of air pressure, air volume and fluid flow has to be selected to achieve full atomisation and a paint film free of defect. One may also face problems sagging, pin - holing and poor paint flow if the control parameters are not monitored properly.

The major disadvantage of conventional spray is that high build coatings cannot be applied by this method, as most paints have to be thinned to a suitable viscosity for satisfactory atomisation.

Airless Spray

This is by far the fastest and most versatile method because it enables application at variable thicknesses. The equipment utilises an electric or air driven motor and a high pressure fluid pump to compress the coating to extreme pressures. The paint is then made to pass through a special tip which atomises it and controls the application, properties.

The main advantages of this method are:

- a) High build coatings can be applied without thinning.
- b) Very fast rate of application.

As already indicated, the special tips used in the spray gun and the pressure control enables one to monitor application of very low to very high viscosity products. Similarly, different slot angles produce spray fans of different widths. The selection of a particular fan width is dependent on the shape and size of the structure to be painted. The choice of fan width is also related to orifice size. For the same orifice size the paint applied per unit area will be less, wider the spray fan. The general indication of orifice sizes is given below to help in choosing the proper orifice size for a paint.

Wet Film Thickness	Orifice Size (mm)
Upto 50 microns	0.02-0.03
100-200 microns	0.03-0.04
>200 microns	0.04-0.07
Mastics	0.10-0.15

There are several designs of tips available, the choice of which depends upon the finish required, the ease of application and ease of cleaning blockages from tips.

Maturation Time

A very important criterion for two pack products where curing takes place through chemical reaction when the components are mixed before application. The mixed paint is normally matured for 30 to 40 minutes to initiate the reaction process which ensures thickness build up and proper drying of the paint film.

Maturation time is, however, to be adjusted depending on pot life and ambient temperature. Products having a short pot life should be allowed less maturation time. Similarly, at high ambient temperature conditions a lower maturation time will provide the adequate effect during film formation.