

Spray application of Belzona Solvent free coatings

The following is a guide to the spray application of Belzona solvent free coatings.

It does not include all safety factors. These should be highlighted by a specific site and application risk assessment. See following for more information on safety.

http://bel.belzona.com/app_know_how/Application/airless_paint_sprayer.pdf

Belzona 1341, 1391S, 1521, 5811 and 5891 are solvent free systems that, with the correct equipment, can be spray applied.

Before detailing the equipment and techniques to be adopted to successfully spray these products, it is worth considering the following points when deciding whether to carry out an application by spraying.

1. Spray application is only suitable on relatively flat areas. It is not a solution to coating difficult sharply curved or confined contours.
2. The areas need to be relatively large as the product wastage/loss in the equipment and during the application process can typically add up to 30-40%.
3. Several litres of Cleaner will be required to flush out the equipment whenever the spray operation is stopped or interrupted. This will require safe disposal.
4. The equipment needed to spray the products is specialised and an experienced operator should be used to ensure the coatings are applied correctly at a uniform thickness.
5. A supply of compressed air is required to operate the equipment as is a suitable power supply for the heaters.

Choice of equipment

The basic equipment required to spray these solvent free coatings is a high volume airless spray unit, ideally fitted with a minimum 63:1, preferably higher, ratio pump. The product needs to be heated to reduce viscosity.

There are two basic options.

The lowest cost option with regard to equipment is to premix the product and to feed this through a single pump airless spray rig.

To reduce the viscosity of the products so as to be in a sprayable form, fluid lines should have trace heating to maintain the product temperature in the lines. Direct heating of the coating has significant disadvantages. Typically a product temperature at the spray tip of 40-50°C (100-120°F) is needed to obtain good atomization. Trace heating is best achieved by circulating hot water alongside the spray lines. (See following links for more information.)

http://bel.belzona.com/app_know_how/Application/construction_of_hot_water_trace.htm

http://bel.belzona.com/app_know_how/Application/Heated%20airless%20set%20up%20-%20water%20heating%20DRAWING.pdf

The alternative to a single airless pump is to use plural spray equipment such as the Graco Xtreme mix, Hydra-Cat system or WIWA Fleximix II, where both Base and Solidifier are fed by separate pumps to a mix manifold at which point they are blended by a static mixer before being transferred to an airless spray gun for application on demand. For cleaning, solvent is pumped by the system to the mix manifold where mixed material is purged from the system.

These systems offer the best control over material used leading to reduced wastage, fewer interruptions to the application and no risk of catastrophic equipment failure that would occur if product cures in the single airless arrangement. They also allow longer fluid lines to be used (up to 30m/100ft) with a short whip hose, as the product is only mixed after the manifold.

Referring back to the lower cost option of a single airless pump, following is a description of the equipment and procedures required to spray the Belzona products.

Equipment

- i) Minimum 63:1 ratio airless spray pump fitted with water heated fluid lines (maximum 15m/45ft), coupled to a short whip hose and line swivel connecting to a high volume gun.
- ii) The heater thermostat should be initially set at 60 -75°C (140-167°F)
- iii) Suitable air supply. Minimum pressure of 5bar (70 psi) and 3.5m³/min (125cfm). Compressor capable of delivering 5.7m³/min (200 cfm) or more should be selected. Oil and water traps must be present.
- iv) A 60 mesh filter should be present and the gun should be fitted with reversible tip appropriate to the product and equipment to be sprayed.

Spraying method

- i) Store product at temperature of 20-30°C. Avoid higher temperatures as this will reduce working life when mixed.
- ii) Purge any solvent from pump and hoses.
- iii) Warm system to required working temperature.
- iv) Place a container of mixed material under the pump and purge the remaining solvent at low pressure from the system with the mixed material by discharging into a waste container.
- v) Once all the solvent has been purged, fix the spray tip to the gun, increase the spray pressure and commence spraying.

Spray process

Once spraying has commenced it must continue without interruption. Freshly mixed units of product must be continually produced to replace that being applied so that freshly mixed material is constantly forcing the earlier mixed material through the system.

Adjust water temperature to spray lines so that product atomises correctly and a good fan pattern is produced. Avoid excessive heat as this can lead to sagging and reduced film build. As a guide the temperature of the product at the spray tip should be 40 to 50°C (100 - 120°F).

Stopping spraying

- i) Turn off the heater
- ii) Remove the mixed material and container from beneath the pump and replace with a container of cleaning solvent (i.e. MEK **not** Belzona[®] 9111).
- iii) Purge the mixed material from the system
- iv) Re-circulate clean solvent to thoroughly clean the whole system.
- v) Finally clean spray tip and filter.

Notes

- i) Any significant interruption to the spray process (10 minutes) will necessitate flushing the system through to prevent the product (at 50°C) from curing and ruining the equipment.
- ii) Belzona[®] 1341 will cause significant wear in the spray tips and replacements should be available. Similarly wear in the non return valve seat and ball itself will occur and replacements should be available.
- iii) Strip down equipment and lubricate. Replace any worn parts. Replace fluid lines.
- iv) If equipment is to be left for long periods, then the system should be flushed with hydraulic oil to reduce risk of corrosion.