

Thermosetting Powder

Introduction

Powder coating is dry pigmented resin which does not contain solvent and is milled to a suitable particle size for application by electrostatic spraying.

Hazards

The principle hazards which may be involved in the application of powder are explosion and toxicity.

Explosion

A powder explosion can occur under the following conditions:

- (1) When the concentration of powder in air is above the lowest level capable of being exploded. All relevant information for currently available coating powder gives this to be 10 grams per cubic metre.
- (2) A source of ignition of sufficient energy is present. This could be a hot surface, a flame, an electrical spark or electrostatic discharge

Because it is difficult to totally eliminate all sources of ignition, most reliance should be placed on keeping the concentration of powder in the application booth below 10 grams per cubic metre.

Toxicity

Powder coating normally supplied ie. epoxy, epoxy-polyester, polyester and polyurethane, all show a low order of systemic toxicity.

Caprolactum as vapour may be released from polyurethane powders during stoving and may give rise to irritation of eyes and mucous membranes. Systemically its toxicity is relatively low.

Some colours, mainly bright red and yellow shades may contain low solubility lead chrome pigments and containers are labelled accordingly. Such colours may also contain cadmium pigments.

Coating powders are generally less likely to cause dermatitis than liquid coatings but can still affect the skin. Persons who develop a continued reaction should not work with powder.

Industrial Hygiene and Good Working Practice

The standard of housekeeping and spray booth air extraction performance should be such that powder does not escape into the workroom or accumulate in the booth.

Floors and fittings should be kept clean with a suitable industrial vacuum cleaner.

Ensure operators are properly earthed. Do not use insulating gloves or footwear. Antistatic footwear to BS5451 1977 or BS1870 1979 is available.

In case of fire, carbon dioxide extinguishers should NOT be used.

To prevent inhalation of airbourne powder, face masks capable of removing respirable dust should be worn. Persons with chronic respiratory complaints should not work with powder.

Use only soap and water, never organic solvents, to cleanse the skin of powder. Compressed air should never be used to remove powder from the hands and clothing.

A total ban on eating and drinking in the work area should be enforced.

Disposal

The disposal of quantities of coating powder should be undertaken by reference to the local authority under the terms of the "Disposal of Poisonous Waste Act 1972"

References

- (1) Code of Safe Practise published by the Paintmakers Association of Great Britain "Application of Powder Coatings by Electrostatic Spraying". Copies are available on request.
- (2) Health and Safety at Work Booklet 22 - Dust Explosions in Factories.

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