Epoxy Systems Spray Lay-Up Operations





MOLD PREPARATION

Molds that are new or have been in storage are cleaned with a stripping and cleaning agent. A release agent, either liquid or paste, is then rubbed onto the mold surface. This may require the use of an electric or air powered buffer. SAFETY AND HEALTH CONCERNS:

Flammability of solvents (e.g. MEK) · Inhalation of solvents

- Skin contact with solvents PROTECTIVE MEASURES:
- Use adequate ventilation
 Wear a disposable coveralls or apron
 Wear protective eyewear
 Prepare molds away from open flames or high heat
- Use respirators
 Wear chemical-resistant gloves
 Do not wear loose clothing
 Change PPE as needed

Inhalation of solventsFlammability of solvents

Use adequate ventilation

Wear disposable coveralls
 Avoid open flames or high heat

EQUIPMENT AND MATERIALS PREPARATION

Spray equipment for the epoxy resin system may need to be prepared prior to use. Solvents may be used to purge lines and clean spray heads. The equipment must be assembled and tested. SAFETY AND HEALTH CONCERNS:

- High-pressure lines
 Skin contact with solvents and residual resin system
 Injection of epoxy resin system through the skin from high-pressure equipment
- - PROTECTIVE MEASURES:
- Wear protective eyewear
- Use respirators
 Wear chemical-resistant gloves

Use adequate ventilation

Wear disposable coveralls
 Wear protective eyewear

BLENDING EPOXY RESINS

Each component is normally stored in a separate container/tank and combined during spraying through an inline mixer at the head of the spray gun. Solvent or reactive diluents may be added to thin the resin. The resin and curing agent is mixed properly if it is uniform in color (no streaking).

- SAFETY AND HEALTH CONCERNS:
- Skin exposure by direct contact with the resin system
 Skin and inhalation exposures if thinning epoxy resins with reactive diluents and solvents · Flammability of solvents

PROTECTIVE MEASURES:

 Use respirators Wear chemical resistant gloves

RESIN APPLICATION AND REINFORCEMENT

Resin is applied to the surface using a spray gun (compressed air, high-pressure airless, air-assisted airless, or flow-coater). A layer of fiberglass or carbon reinforcement is then laid over the resin. Wet-out/compaction of the reinforcement is done using a special laminating roller with grooves in it. This procedure is repeated until the desired part thickness is achieved. A ventilated paint booth can be used for small parts. forcement



- Carbon fibers may cause irritation to eyes and skin Injection of epoxy resin through the skin from high-pressure equipment Skin and inhalation exposure to overspray mists

 - PROTECTIVE MEASURES: Spray equipment and mold should be properly grounded Use respirators Wear chemical-resistant gloves Wear protective eyewear Nemove PPE outside of work area and avoid skin contact with resin system

 - Use adequate ventilation
 Wear disposable coveralls
 Wear chemical-resistant boots
 Replace contaminated PPE at breaks

Use respirators

CURING

When lay-up is complete, the part will need to be cured. Depending on the resin formulation, a ventilated curing oven may be used or the part will cure at room temperature for a number hours or days. SAFETY AND HEALTH CONCERNS:

- Inhalation of resin system vapors
 Flammability of solvent vapors from uncured resin systems Skin contact with uncured resin
 - PROTECTIVE MEASURES:
 - Use adequate ventilation
 Wear chemical-resistant gloves if contact is possible
 - **DEMOLDING/FINISHING**

After the part is partially cured, it is removed from the mold. Finishing operations such as cutting or sanding, using electric or air powered tools may be required.

- SAFETY AND HEALTH CONCERNS:
- Cuts and scrapes from flash around edges of the part
 Inhalation and skin contact with uncured resin system dust
- PROTECTIVE MEASURES:
- Wear protective eyewear Use adequate ventilation to minimize dust from finishing operations

CLEANUP

When the job is complete, tools and equipment must be cleaned. This includes purging feed lines with solvent and partially disassembling spray equipment.

- SAFETY AND HEALTH CONCERNS:
- Grounding of equipment and flammability of solvents Skin contact with solvents and residual epoxy system Inhalation of solvents during cleaning equipment from high-pressure spray equipment
- - PROTECTIVE MEASURES:
- Ground all equipment while cleaning with solvents Use adequate ventilation when cleaning equipment

- Remove PPE before entering lunch or other break rooms
 Avoid skin contact when removing PPE

Injection of solvent and coating into the skin
Eating/drinking/smoking before cleaning skin

Use respirators · Wear protective clothing

Use respirators while cleaning equipment
 Wear disposable coveralls when cleaning equipment
 Wear chemical-resistant gloves when cleaning equipment
 Wear protective eyewear when cleaning equipment

Remember: Always read the MSDS before using a chemical



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