

ARCOR® International

a Division of AEC Corp.

PROCEDURES FOR SPRAY COATING APPLICATION WITH PLURAL COMPONENT SYSTEM

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NOTE: These are general procedures and are not intended to meet the specific needs of any particular job. Always refer to appropriate data / application / material safety data sheets. Customization or revision may be required.

SECTION I

We recommend the use of a plural spray component system in certain settings and situations. There are specific guidelines for spray coating which will be outlined in the following information. For information pertaining to all aspects of application and surface preparation, we recommend referring to product data sheets and the General Application Specification.

GENERAL INFORMATION

ARCOR® makes use of advances in 100%-solids technology to spray their non-solvent coated coatings onto large surface areas, which would normally require many hours of labor to coat using traditional methods. The base and activator components of the 100%-solids epoxies are heated separately which lowers the viscosity of the product to a level where it can be atomized through an airless spray system. Traditionally, heavy epoxy material has needed to be heated or solvented in order to reduce viscosity to a level where the material could be atomized through a spray system. ARCOR®'s plural spray system regulates and maintains optimal heat levels of the base and activator before the parts are mixed and immediately transferred through the whip-hose to the spray gun. The spray system is adjustable to a wide range of mix ratios. The effective controlling of heat and mixture shortens cure time and allows a variety of products to be used in spray application. The plural component system also saves material because base and activator are mixed together only as needed.

Spray application of high performance epoxies allows for coverage of more surface area in dramatically less time. In addition, a spray application provides a consistent coating thickness with less voids or uneven coverage areas. Spray application of epoxy reduces overall job cost in terms of man-hours and material used. Spray technology has become the preferred choice of spec writers and facility engineers at today's sophisticated power and industrial locations because of increased control of application.

ARCOR® 100%-solids epoxies can be applied with the plural component spray system to any surface or component, which requires a protective coating. Some of the applications, which are ideal for spray coating, are tanks, waterboxes, secondary containment, industrial flooring and large piping. Coatings can be sprayed indoors or outdoors within the same general parameters of hand application. Spray technology is an ideal approach to large surface area projects, which are traditionally labor intensive.

SECTION II

REQUIREMENTS

To apply ARCOR® coatings using the plural spray system, the following items are needed on site:

Compressed air (50-90 cfm) 100 psi minimum never to exceed 110 psi to air pump
 120 Volt 85 Amp service
 Clean location for spray system within 200 ft of job site.

Have available (6) 20amp, 110v circuits;

- | | | |
|----------------------|-----------------------|-----------------------|
| • 2- Tank Heaters | 120 VAC / 15 amp each | (30) |
| • 2- Line Heaters | 120 VAC / 18 amp each | (36) |
| • 2- 50' Heated Hose | 120 VAC / 15 amp each | (30); |
| | | <u>96 Total Amps;</u> |

NOTE: All electrical components should be protected from weather as they are not watertight or explosion proof. An application crew consists of a spray person and a person running the pump.

For optimal viscosity, the base and activator components of the epoxy must be pre-heated to a minimum of 130° F * before being sprayed. Normal initial pre-heat time prior to start up is one hour *.

(* Pre-heat time and temperatures vary depending on specific product. Refer to product data and application sheets for exact figures.)

SECTION III

START-UP PROCEDURE

Appropriate safety gear including masks, suits, gloves, etc. is required on site before start-up. In addition, there should be cleaning solvent (approx. 10 gallons of MEK, Acetone or similar Ketone), various sized containers for parts and solvent and an assortment of brushes, probes and appropriate wrenches. The RAC tips, spray gun, static mixer, mixer manifold and the unit are to be well maintained by soaking and cleaning with solvent. A “clean-up” station should be established in a well-lit and ventilated area.

Insure that compressed air is clean and dry and at least 80cfm @ 100 psi. The air hose to the pump should be 3/4” ID or larger and unrestricted. A filter and lubricator comes on the unit (the lubricator should be filled with non-detergent oil). In cold and damp environments where air motor icing can be a problem, we recommend a 50-50 water / Ethylene Glycol mixture in the lubricator or straight Marvel Mystery Oil.

CHECK PUMP RATIO SETTINGS

Verify volumetric mix ratio of coating. Set slave pump to indicated setting for material to be sprayed. Consult ARCOR® technician with questions regarding appropriate settings.

Insure that supply tank on slave pump is aligned so that supply hose to slave pump is straight with no bends. Slave supply tank can be moved in and out as well as swiveled. Secure tank in proper position by tightening two tee nut handles.

PROPORTION UNIT WITH SOLVENT

Check in-line filters. Pour five (5) gallons of solvent into the base (A) and activator (B) hoppers. Open each hopper outlet valve to the “A” and “B” proportioning pump. Turn proportioning pump motor air valve on. Open mixer manifold handle (back position). Hold spray gun (without tip) above a flush bucket. While slowly turning proportioning pump regulator to 30-40 psi, observe A and B fluid pressure gauges and insure they are balanced. If uneven, pull trigger on spray gun until gauges balance. After balancing gauges, close spray gun and slowly increase air pressure to 50 psi. Insure gauges remain balanced (if unbalanced, slowly open high side fluid re-circ valve until gauges are even and then tightly close re-circ valve). Pressure check system for leaks @ 1500 psi tightening as necessary. Turn off pump air valve. Reduce fluid pressure to zero by triggering the spray gun. Drain solvent from pumps, hoses and valves.

Note: Pressure gauges have an accuracy of about +/- 10%.

SOLVENT FLUSH

Use only recommended flush solvent. Fill solvent flush pump bucket with recommended solvent, turn on air valve and slowly adjust air pressure to 50 psi. Keep pump at 5 cycles per minute until primed. Check for leaks and tighten as necessary. With gun and mixer manifold handle closed (forward position), trigger spray gun and hold open. Open solvent purge needle valve and flush. With gun open and solvent valve closed, solvent pump should not move or cycle. If pump cycles it indicates a leak, leaky valve or bypassing inside the pump. Repair as needed. Turn air valve off on solvent pump.

NOTE: Perform the “Solvent Pump check-out” every day before starting up.

LOADING AND STARTING CLEAN UNIT

1. Fill solvent pump compartment with solvent and perform “Solvent Pump Check-Out”.
2. Start tank heaters (heaters preset @ 135°F). Caution: Each heater will draw approximately 15 amps or a total of 30 amps @ 120V. Each tank heater has a 20-amp circuit breaker.

Remove heating fluid fill plug and check level of water/ anti-freeze in tank heat jacket. Tank should be filled to top. **Note:** Heating elements will burn out in seconds if there is no heating fluid in outer tank.

Turn on both tank heaters.

Optional: Turn on each tank agitator and run at low rpm then shut off.

LOADING MATERIAL INTO UNIT

The base and activator materials should be stored at 60°F to 70°F. Close hopper fluid outlet valves and make sure drain caps are tight. (Base material goes into hopper “A” behind pump air motor. Activator material goes into hopper “B” behind slave pump.

Pour 5-10 gallons of base into “A” hopper and 5-10 gallons of activator into “B” hopper.

Turn on tank agitators and run at low rpm, as material requires. The material in the “A” and “B” hoppers normally needs to be heated about one (1) hour to reach 135°F.

NOTE: Preheat times differ depending on material. Refer to material data sheets for exact times.

LOAD PUMP AND HOSE SYSTEM

TURN “A” and “B” inline heaters off. Each line heater has a 20-amp circuit breaker. The heated hose has a 15-amp GFCI circuit breaker.

Remove gun, hose and static mixer and mixer manifold head assembly. Open mixer manifold valves (pull handle back) direct into waste container. Open outlet valves to

pumps for “A” and “B” hoppers. Slowly turn on pump motor air valve. Run at slow speed. Pump material through heated hoses to remove air bubbles and solvent. Continue clearing hoses until material flows clean from both hoppers. Close ball valves by pushing handle toward the gun. (Closing the mixer manifold by pulling the handle toward the spray gun is intentional. For example, if the mixer manifold is moved to another location, the ball valves will automatically close.) Install mixer manifold outlet head. Turn on heated hose and set to 135°F.

Optional: Start re-circulating by opening re-circ valves on material lines leading back to hopper tanks. Hold catch lines inside hopper tanks to catch solvent from return lines when first starting re-circulation. Turn on A and B inline heaters. Set @135°F. Circulate by turning pump air valve on and running pump slowly (10 cycles per minute). Circulating speeds hopper heat up, heats the pumps and removes air from inside the pumps. Make sure material comes to a temperature of 135°F and no bubble popping is evident. Run agitator at low rpm to avoid trapping air in material. Once hoppers, unit and hose are up to heat, close A and B re-circ valves. Turn off air to motor of pump.

RATIO CHECK

To do ratio check, remove return hoses from A and B re-circ valves. Open pump motor air valve and adjust air regulator to bring fluid outlet pressure to 800-1000 psi. Open both re-circ valves simultaneously to establish flow (direct into clean A and B containers). Partially close re-circ valves until A and B fluid pressures are both at 500-600 psi. Simultaneously take A and B beaker samples from re-circ valve fluid streams to verify ratio.

SECTION IV

TEST SPRAY

NOTE: Two people are required for complete spray testing

Connect static mixer, whip hose and gun to mixer manifold. Close circulating valves. Open manifold material valves (pull handle back). Trigger gun with spray tip removed. Open air motor ball valve slowly to start pumping material (run pump slowly).

Pump sufficient mixed material through the gun to insure it is clean (virgin) and that there are no solvent or air bubbles. Install appropriate spray tip.

Adjust pump air pressure until spray pattern is achieved (about 3500-psi fluid pressure). Trigger gun to test spray fan pattern on scrap cardboard until optimal atomization is achieved. Spray sample area to verify proper mix, ratio and cure.

PRODUCTION SPRAY

Pre-arrange all equipment within the work area so as to allow the spray operator to spray continuously. The best spray application results are obtained with the least amount of triggering of the spray gun.

To produce a spray fan at the tip, the pressure at the spray gun should be 3500 psi @ 135°F. Adjust proportioning pump air pressure as necessary to achieve a spray fan. Set inline heaters at 135°F with fluid in system. Using a spray tip orifice of .023 to .031 will give a flow rate of .6 to .8 GPM. Typical tip fan used is 40° to 50°. Average tip life is about 500 gallons. Always have a new tip ready to use. A worn out tip can cause a loss of fan and poor coating thickness consistency. Throw worn tips away.

When spray operator stops spraying, mixed material must be immediately flushed thoroughly from the tip, gun, whip and mixture. If not properly flushed and cleaned, mixed material will solidify. **IMPORTANT:** Proper flushing is mandatory to assure normal equipment operation and application production and to avoid down time and repair costs.

SECTION V

DAILY / WEEK STOPAGE CLEANUP: If unit will not be used for 2 or more hours.

Turn off tank heaters, inline heaters and heated hose. Turn off hopper agitators. Turn off air supply to proportioning pump and bleed system of air. Insure pump is stopped with the pump rods in the down position (shiny part of pump rod hidden from view).

Slowly trigger gun into waste container to relieve pressure in system. Open solvent valve and flush mixer, whip hose, gun and tip until clean solvent can be seen.

Remove static mixer from manifold. Remove element from mixer and inspect and clean element tube. A clean element means that the proper solvent in the appropriate quantity was flushed.

Important: Do not place static mixer onto mixer manifold until the unit is ready to be used again.

Remove spray tip and clean with a soft brush. Never use a knife or steel brush because it will cause damage to the tungsten carbide tip. After cleaning the tip, it may be soaked in a closed container of clean solvent if desired.

Remove air supply from unit. Clean all equipment so that it is spotless.

NOTE: Allow enough time at the end of the shift to completely clean the unit. The supervisor or foreman needs to inspect the cleaning of the unit. Field experience has proven that a thorough cleaning greatly improves performance and reliability of the unit.

Material does not need to be removed from the hoppers or pump if the unit is to be used within 3 days. Insure that the material is circulated and/or agitated at start up each day to prevent separation.

STORAGE AND LONG-TERM SHUT-DOWN

Follow the daily clean up schedule as described and then do the following steps.

Drain A and B material from tanks. Wash tanks with proper thinner or solvent.

Optional: Open re-circ valves and circulate 3 or 4 gallons of solvent in each hopper tank as in the circulating mode (pump to tank). Close re-circ valves.

Purge paint from the heated hose and circulate solvent through hoses and mixer manifold until clean. Turn off air to pump. Open re-circ valves (optional).

To clean inline paint screens, open in-line filters drain valves, remove filter tank and inspect screens for debris. Clean as needed.

Completely drain system and circulate clean solvent for several minutes.

Leave mineral spirits solvent or oil in system during long-term shut down. All pump rods should be in down position with TSL in wet cups.

NOTICE

All statements, information and data contained herein are based upon tests and field experience, which we believe to be accurate and reliable. However, since field conditions vary widely, the user must determine the suitability of the equipment for particular use.

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