



# Archco 454HT Epoxy Spray Application Specifications

## 1.0 Scope

- 1.1 This specification covers the internal surface preparation and coating of vessels. If the vessel can't be heated to a steel temperature of 200°F (93°C), don't use this product.

## 2.0 Material and Storage

- 2.1 Material shall be Denso Archco Tank Lining system as manufactured by Denso North America, 9747 Whithorn Drive, Houston, TX 77095 (Tel) 281-821-3355 (Fax) 281-821-0304 or 90 Ironside Crescent Unit 12, Toronto, Ontario, Canada M1X1M3 (Tel) 416-291-3435 (Fax) 416-291-0898. E-mail: info@densona.com.
- 2.2 Material shall meet the physical properties of the attached product data sheet.
- 2.3 Storage of the material shall be in a warm dry place, between 40°F (4°C) to 95°F (35°C)  
The containers shall be stored up right.

## 3.0 Equipment

- 3.1 Equipment shall be a single-leg, airless or hydraulic spray unit capable of pumping the specified Archco coating (see product data sheet). The unit shall be a recommended pump 70:1, minimum 68:1 spray pump with a recommended hose size of ½" (12.5 mm) diameter x 50' (15.25 m) long. A Graco mastic gun with a 27 to 31 mil (0.69 mm to 0.79 mm) tip size is recommended. Remove the pump and tip filter.
- 3.2 Archco 400E Thinner or equivalent is recommended to clean the equipment.
- 3.3 Wet film thickness gauges.

## 4.0 Surface Preparation

- 4.1 Application of the coating shall not begin until the internal surfaces are prepared as required by paragraphs 4.2 through 4.9.
- 4.2 The interior surfaces shall meet the following requirements:
- 4.2.1 All interior welds shall be continuous.
- 4.2.2 All interior welds shall be smooth but not necessarily flush. If necessary, grinding is the preferred method of correction. Sharp points, edges, burrs, and irregular surfaces of a size that would interfere with

the application of a continuous coating shall be repaired. No filler other than weld metal shall be considered acceptable. No undercutting of the welds is acceptable.

- 4.2.3 All weld slag, spatter, and flux shall be removed.

- 4.3 Surface contamination, such as oil, shall be removed according to SSPC-SP 1 or another effective cleaning method before blasting.

- 4.4 All components that will not be coated shall be removed or protected prior to blasting.

- 4.5 Surfaces shall be prepared for coating by dry-abrasive blasting to a white metal blast finish in accordance with NACE No. 1/SSPC-SP 5/ISO 8505-1 Sa 3. All mill scale or new metal must be removed. The white metal blast may be maintained using proper dehumidification.

- 4.5.1 The compressed air for blasting shall be free of water and oil.

- 4.5.1.1 The cleanliness of the air shall be determined by blasting without abrasive into a white cloth for 20 seconds. If oil appears on the cloth, the trap and separators shall be blown down, along with any necessary corrective action, until subsequent cloth tests show no oil or water contamination in accordance with ASTM D 4285.

- 4.5.2 The blasting abrasive shall be angular, clean, dry and of a suitable mesh size to produce a profile of 2.5 to 5.0 mils (0.063 to 9.125 mm) on the blasted surface as measured by an appropriate visual comparator or replica film, such as that used in NACE Standard RP0287. The blast profile shall appear uniform and continuous. Surface profile of the vessel shell shall be recorded on the inspection form. Because blasting dust could affect profile readings, all surfaces shall be thoroughly cleaned prior to reading the blast profile.

- 4.5.2.1 Steel shot shall not be used as an abrasive.

- 4.6 Any slivers, plate laminations, cold lap welds, or mill defects in the plate revealed by the blasting operation shall be corrected and reblasted as necessary.

- 4.7 After the blasting is completed, the interior of the vessel (blasted surfaces and anchor profile) shall be cleaned of all blast residues and foreign materials.

- 4.7.1 Compressed air blowdown of steel surfaces is not an

effective means of complete dust removal and could be a source of surface contamination.

- 4.7.2 A more efficient cleaning method is the use of a fine bristle brush or broom followed by vacuum cleaning. Brushes and brooms should be cleaned and/or replaced frequently.
- 4.7.3 Magnets can affectively remove steel grit particles not removed by other methods.
- 4.8 If visible rust bloom occurs before the first coat, then it shall be removed by reblasting to original specification.
  - 4.8.1 The interior of the vessel shall be protected from moisture from the time of blasting to the time of coating application and the temperature of the steel shall be a minimum of 5°F (3°C) above the dew point.
  - 4.8.2 The interior of the tank needs to be checked for soluble salts, such as chlorides, nitrates, and sulfates, using a CSN Test Kit from Denso North America. The preferred salt level is a maximum of 3 ppm. If above this level, an approved soluble salt remover, such as Chlor Rid, shall be used to remove the contamination prior to spraying.

## 5.0 Application

- 5.1 The coating application shall not proceed until the temperature of the steel is 90°F to 120°F (32°C to 49°C). As a result, the vessel shall be insulated to eliminate the presence of heat sinks.
- 5.2 At the time of coating application, the blasted surface must be in accordance with NACE No. 1/SSPC SP 5. The surface shall be reblasted if rust bloom has formed between the time of blasting and the coating application.
- 5.3 At the time of coating application, the surface shall have no condensation, precipitation or any other forms of contamination.
- 5.4 The coating shall be applied in accordance with this standard.
- 5.5 Before or after spraying the first coat, all welds, grooves, pits, and other imperfections shall be scrub-stripped.
  - 5.5.1 Scrub-stripping is accomplished by moving the brush back and forth in a scrubbing motion to work the material into the imperfections.
  - 5.5.2 Scrub-stripping shall be performed with a good-quality, bristle brush using Archco 454HT that has been thinned 5% using Archco 400E Thinner, MIBK, or other appropriate solvent.
  - 5.5.3 Bristles left on the surface shall be removed. The coating shall be sanded smooth and repaired as necessary.
- 5.6 Each coat of Archco 454HT shall be inspected visually for defects before application of the next coat.

- 5.6.1 Unacceptable defects shall be corrected prior to application of the next full coat and prior to the final cure.

- 5.7 The coating system shall be applied in multiple coats until the thickness specified is achieved. Typically each coat shall be between 15-20 mils DFT. To achieve 30 to 40 mils (762 - 1,016 microns)DFT, see section 7.4 and 8.2

## 6.0 Mixing Instruction

- 6.1 Flush all equipment and fluid lines with clean thinner. Pump fluid line with clean thinner in front Archco 454HT.
- 6.2 Be prepared to apply material immediately after induction time and thinning. No induction time required.
- 6.3 Each component (A and B) shall be thoroughly mixed using a clean, air-driven, Jiffy mixer or equivalent prior to spraying. Add Part B to the Part A container and mix thoroughly until a uniform color is achieved using a clean, air-driven, Jiffy mixer or equivalent. Do not add solvent prior to thorough mixing of the system.
- 6.4 Apply mixed material immediately.
- 6.5 The pot life is approximately 120 minutes for 5 gallons of thinned material at 90°F (32°C).

## 7.0 Spray Application (First Coat)

- 7.1 Metal temperature and dew point shall be measured and recorded prior to beginning application.
- 7.2 All interior carbon steel surfaces shall receive the lining.
- 7.3 Archco 454HT shall be applied within 24 hours of abrasive cleaning. If any rust bloom forms after abrasive cleaning, then the specified surface cleanliness must be restored. Archco 454HT shall be applied using spray equipment including a spray tip orifice of 0.027" to 0.031" (0.69 mm to 0.78 mm) and with a 68:1 (minimum) ratio pump adjusted to produce approximately 2800 psi (19.3 MPa) fluid pressure.
- 7.4 Using a cross-hatch spray pattern, spray apply one coat of Archco 454HT 18-24 mils (457 - 609 microns) WFT unthinned or 19-26 mils (482 - 660 microns) WFT thinned to album a DFT of 15-20 mils (381 - 508 microns). Wet film thickness shall be frequently tested using a notch gauge according to ASTM D44114.
- 7.5 After applying the coating, allow to dry using dry circulating air overnight at 90°F - 120°F (32°C - 49°C).
- 7.6 Visually examine the vessel surface for film defects. Runs, sags, embedded debris, overspray, rust bleed through, discoloration, holidays, amine blush, non-uniformity, alligatoring, solvent pop, brush marks, orange peel, fish eyes, cracking, checking, crazing, inadequate cure, or lack of adhesion shall require repair or re-work. The lining shall be free of visible pinholes, porosity, voids, and shall be uniform in thickness.

## 8.0 Spray Application (Second Coat)

- 8.1 Repeat steps 7.4 to 7.6.
- 8.2 Total dry film thickness shall be 30 to 40 mils (762 - 1,016 microns). Nothing under 30 mils (762 microns) DFT will be accepted. If new lining thickness is found, the area must resprayed.
- 8.3 Holiday testing, using 125 V/mil shall be performed on 100% of the lining to ensure the absence of holidays or to locate holidays present in order to repair them prior to returning the vessel to service.

## 9.0 Lining Preparation and Touch-Up

- 9.1 Measure and record dry film thickness with a calibrated dry film thickness gauge in accordance with SSPC-PA2. Make five spot measurements spaced randomly over each 100 ft<sup>2</sup> (9.3 m<sup>2</sup>).
- 9.2 Prepare defective film areas by light sanding. Feather in repair areas to minimize a break in edges. Use tape as necessary to border off repair sites.
- 9.3 Remove any sanding dust by wiping with a clean tack rag. Touch-up repair areas with the Archco 454HT using an artist brush to obtain a uniform thickness with a minimum of brush marks. Metal temperature must be at least 60°F and 5°F (15.5°C and -15°C) above the dew point.
- 9.4 All touch-up of repair areas shall be completed within 24 hours of initial lining spray application.
- 9.5 For most applications, the vessel can be put back into service after the post cure is completed.

## 10.0 Post Cure

- 10.1 The ARCHCO 454HT lining system requires a heat soak after touch up is completed in order to achieve its reported performance characteristics.
- 10.2 The steel temperature of the vessel must reach a temperature of at least 200°F (93°C) for a period of at least 2 hours. The steel temperature shall not exceed 250°F (121°C).
- 10.3 The heating rate of the steel shall not exceed 1°F (0.5°C) /min.
- 10.4 Insulation of the vessel is required prior to heating to prevent a heat sink.
- 10.5 After the lining is cured, holiday testing may be required at the discretion of the owner.

## 12.0 Inspection Records

- 12.1 The applicator shall provide and retain a copy of his inspection records for not less than 5 years, such as:

- 12.1.1 Owner, vessel number, date and location.
- 12.1.2 Environmental conditions at the time of coating application.
- 12.1.3 Inspection record showing surface cleanliness level of steel and average surface profile depth.
- 12.1.4 Inspection record showing number of gallons and batch numbers of Archco 454HT used for vessel.
- 12.1.5 Drawing of vessel surfaces showing DFT measurements, holidays and repair areas.

## 13.0 Safety

- 13.1 Follow the guidelines detailed in the Safety Data Sheets (SDS) for Archco 454HT Part A and Part B.
- 13.2 Keep containers closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.
- 13.3 No open flames, smoking or welding shall be allowed in the immediate vicinity of any operation involving Archco 454HT.
- 13.4 Always refer to project specifications as they may supersede Denso specifications.



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