



SURFACE PREPARATION AND APPLICATION GUIDE

SERIES 335 TANK ARMOR

TNEMEC COMPANY INCORPORATED

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Published technical data, instructions, and pricing are subject to change without notice. Contact your Tnemec technical representative for current technical data, instructions, and pricing. Warranty information: The service life of Tnemec's coatings will vary. For warranty, limitation of seller's liability, and product information, please refer to Tnemec's Product Data Sheets at www.tnemec.com or contact your Tnemec Technical Representative. 11/2025

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1.0 INTRODUCTION

The purpose of this guide is to acquaint contractors and applicators with the basic information necessary for properly ordering and installing Tnemec's Tank Armor. Prior to starting work, please read this entire guide carefully. If you have questions, contact your Tnemec representative or call +1 816-483-3400. It is important that you obtain answers to any questions before work begins.

Please review all pertinent Product Data Sheets as well as the Tank Armor Plural Component Equipment Recommendation Guide prior to starting. Also, reference the project specifications and compare them with this guide and the Product Data Sheets. Resolve any inconsistencies prior to starting work.

This application guide cannot cover every issue that may be encountered in the field. If issues arise that are not addressed in this guide or the Product Data Sheets, please contact your Tnemec representative or call +1 816-483-3400 for assistance.

2.0 PRODUCTS AND PACKAGING

2.1 SERIES 335 TANK ARMOR

Internally reinforced, 100% solids epoxy lining that provides protection against corrosion and chemical attack in ground storage and transport tanks. Specified for use as a protective lining in finished fuels, sweet/sour crude and brine immersion exposures for above ground and transport tanks, and pipelines. Series 335 provides long-term durability and corrosion control for extended service life.

2.2 SERIES 335 PACKAGING

KIT SIZE	PART A (PARTIALLY FILLED)	PART B (PARTIALLY FILLED)	YIELD (MIXED)
Large Kit †	3 - 55 gallon drums	1 - 55 gallon drum	200 gallons (757.0 L)
Medium Kit †	3 - 6 gallon cans	1 - 6 gallon pail	20 gallons (75.7 L)

† Configured for plural-component applications only.

Note: Series G312-1234 TK can be used for repair or touch-up. Reference the Series 312 product data sheet for packaging and mixing information.

2.3 SERIES 335 COVERAGE RATES (THEORETICAL)

	DRY MILS (MICRONS)	WET MILS (MICRONS)	SQ.FT./GAL (M ² /GAL)
Suggested	30.0 (762)	30.0 (762)	53 (5.0)
Minimum	20.0 (508)	20.0 (508)	80 (7.5)
Maximum	50.0 (1270)	50.0 (1270)	32 (3.0)

Allow for overspray and surface irregularities. Application of coating below minimum or above maximum recommended dry film thickness may adversely affect coating performance.

3.0 GENERAL REQUIREMENTS FOR THE WORK SITE

3.1 CLEANLINESS

Prior to and during surface preparation and the lining application, cleanliness must be maintained to avoid contaminants compromising the performance of the lining system. To prevent contamination from being tracked into the work area, establish a clean area around the entrance of the tank where clean footwear, or disposable overshoes, can be put on prior to entering the tank.

3.2 MATERIAL STORAGE

Minimum storage temperature for the product is 20°F (-7°C) and maximum is 110°F (43°C). Prior to application, the material temperature will need to be between 70°F and 80°F (21°C and 27°C). It is suggested that the material be stored at the aforementioned temperatures at least 48 hours prior to use.

3.3 DEHUMIDIFICATION

The surface should be clean, dry, and contaminant free, and be at least 5°F (3°C) above the dew point. Do not apply when humidity exceeds 80%. For tanks, dehumidification equipment is recommended if humidity exceeds 80%.

If dehumidification equipment is not used, the surface to be coated should be abrasive blasted within twenty four (24) hours prior to the application of the lining material.

3.4 VENTILATION

When used as a tank lining or in enclosed areas, provide adequate ventilation during application and cure.

3.5 HEATING

Series 335 may be installed only when steel temperatures reach above the minimum temperature that is indicated on the Series 335 product data sheet. Necessary heating, as specified, should be by means of a heat exchange system that is incorporated into the dehumidified air supply. Air admitted into the tank should not pass directly through a combustion chamber.

3.6 LIGHTING

Reference SSPC-Guide 12 for more information.

4.0 STEEL SURFACE PREPARATION

4.1 PRIOR TO BLASTING STEEL

Before work can commence on tanks previously in service, it is vital that all internal tank surfaces are clean, dry, and in suitable condition for surface preparation and lining system application. The following minimum requirements apply:

- Tanks must be structurally sound and free of chemical fumes (gas-free).
- Mill scale or other debris attached to the tank's surfaces, must be removed. For heavily scaled or contaminated surfaces, sweep blasting may be required.
- If hydrostatic testing is carried out using salt or brackish water in the tank, then this test must be followed by fresh water washing. The maximum allowed total soluble salt contamination before application of Series 335 is 3 µg/cm².
- The surface should be clean, dry, and contaminant free, and be at least 5°F (3°C) above the dew point. Do not apply when humidity exceeds 80%. For tanks, dehumidification equipment is recommended if humidity exceeds 80%.
- If dehumidification equipment is not used, the surface to be coated should be abrasive blasted within twenty four (24) hours prior to the application of the lining material and before flash rusting occurs.

4.2 WELDS

Remove weld spatter, burrs, or protrusions; remove and/or round sharp edges; and smooth rough welds and gouges prior to abrasive blasting. Welds should be ground to remove any irregularities and are considered ready for painting when a minimum finishing level of a C designation, as defined by NACE SP0178 latest revision, has been achieved.

4.3 CONTAMINATED SURFACES

Unlined tanks or previously-lined tanks require checking for contaminant presence that require complete removal prior to abrasive blasting. Water soluble contaminants such as chlorides, sulfates, acids, alkalis, etc. are not readily visible when present in small quantities on the surface of the metal. These surface contaminants can be embedded into blast profile if not removed and cause extensive, persistent corrosion and blistering under the protective coating system.

4.4 PREPARATION OF STEEL - ABRASIVE CLEANING

Steel surfaces in immersion service to receive Tnemec's Tank Armor materials should be abrasive blasted in accordance with SSPC-SP10/ NACE 2 Near-White Metal Blast Cleaning or ISO Sa 2 1/2 Very Thorough Blast Cleaning with a minimum angular anchor profile of 3.0 mils (75 microns). For aggressive cargo exposures or immersion in elevated temperatures, an SSPC-SP5/ NACE 1 White Metal Blast Cleaning or ISO Sa 3 Blast Cleaning to Visually Clean Steel with a minimum angular anchor profile of 3.0 mils (75 microns) may be required. Contact your Tnemec Representative for specific surface preparation recommendations based on chemical exposure and temperature.

The abrasive used should be clean, dry, bagged material that has a hard, angular cutting surface, such as aluminum oxide. Abrasive materials should be selected to produce the required 3.0 mils (75 microns) minimum angular anchor pattern and no evidence of a polished or peened surface will be accepted. Depth of anchor pattern is suggested to be measured by using HT Testex-Replica profile tape prior to the application of the prime coat. Profile readings should be recorded on HT Testex-Replica tape and retained by the applicator for verification as part of the Quality Assurance file (reference NACE SP0287 and ASTM D4417).

The compressed air used for blasting should be free of water and oil. Adequate traps and separators should be used to ensure elimination of all contaminants. Cleanliness of the air supply may be checked by operating the line without abrasive media through a clean white cloth for 20 seconds. If oil or water appear on the cloth, the traps and separators should be cleaned until subsequent 20 second tests prove satisfactory (reference ASTM D4285).

Blasting should not be performed when the surface temperature is less than 5°F above the dew point to prevent the formation of rust bloom. Dew point and surface temperature readings should be taken prior to blasting to ensure this condition. In addition, application of the prime coat should be scheduled so as to immediately follow blasting and cleaning operations. Painting over flash rust or other contaminants is not acceptable. Care should be exercised by all personnel to avoid hand or clothing contamination of the freshly-blasted surface.

All dust and blasting debris must be removed by vacuuming. Cloths should not be permitted for cleaning blasted surfaces because of possible lint contamination. Brushing or blowing the surface should not be permitted as these methods will not dislodge all particles embedded in the surface profile.

4.5 PREPARATION OF ALUMINIUM

All aluminum surfaces to receive Tnemec's Tank Armor materials

should have a minimum 3.0 mil (75 microns) angular anchor profile. For more information please reference ASTM D1730, Standard Practices for Preparation of Aluminium and Aluminum-Alloy Surfaces for Painting.

4.6 SURFACE IMPERFECTIONS

Abrasive blasting may expose surface imperfections in steel surfaces that may previously have gone unnoticed. If practical, these imperfections must be repaired immediately and blasted to duplicate the surrounding area. If immediate repair is not feasible (due to loss of blast), the affected area is to be masked off and repaired following application of the first coat. If welding is involved in the repair procedure, the masked area must measure 6" in any direction from the weld. The edges of all masked repair areas should be feathered using an abrasive cloth or wheel. Prepare the repaired area for coating using the surface preparation procedures for steel outlined previously in Sections 3 and 4. Any contamination resulting from the repair must be removed by solvent wiping prior to abrasive blasting.

A record should be kept of all repaired areas using a coordinate system. The repaired area must be spot-blasted and remain free of voids, undercutting and weld spatter and exhibit a minimum 3.0 mil anchor pattern.

5.0 MIXING

Do not mix part A with part B. **Caution:** Do not reseal mixed material. Exothermic temperature can reach in excess of 250°F (121°C). An explosion hazard may be created.

5.1 DRUM SETS

Place blanket heaters on drums and set to medium heat. Recirculate the material through the primary heaters, set to the highest setting, back into the drums. Remove the center 2" bung on the drum and insert the drum agitator. The material should be 80°-90°F (27°-32°C) before the drum agitator is turned on. Agitate the material for 30-60 minutes before use or until the material in the drums reaches 110°-120°F (43°-49°C).

5.2 MEDIUM KITS

To aid in mixing this material, place it in a 70°F to 80°F (21°C to 27°C) heated area for 48 hours prior to its use. Then mechanically mix the entire contents of Part A and Part B separately. Use a minimum 10 amp, 3/4" heavy-duty drill with a PS Jiffy blade and mix the components for a minimum of two minutes. **Note:** Product must be heated to 110°-120°F (43°-49°C) prior to and during application.

5.3 SERIES 312 TOUCH-UP KIT

Series G312-1234-TK can be used for touch-up or repair of the Series 335 Tank Armor lining. The Series 312 touch-up kit consists of four (4) tubes along with six (6) static mixers.

Equipment: A dual cartridge applicator with a 26:1 thrust is required and can be ordered separately (F100-TKAP2).

Usage: Material tube must be used in conjunction with provided static mixer in order to ensure proper mixing. Unscrew retaining ring and remove both plugs. Save plugs in case entire tube is not used. Install static mixing element, replace retaining screw ring, and place tube in applicator. Pump handle until the material is of uniform color. This results in approximately 1 fluid ounce of waste material that cannot be used and should be discarded. Use a putty knife or spatula to ensure adequate coverage and mixing.

For more information regarding repair, please reference section 9.0 of this guide.

6.0 APPLICATION & EQUIPMENT

6.1 APPLICATION CONDITIONS

The minimum surface temperature is 35°F (2°C) and maximum is 110°F (43°C).

The surface should be dry and at least 5°F (3°C) above the dew point. Do not apply when humidity exceeds 80%. For tanks, dehumidification equipment is recommended if humidity exceeds 80%.

Under certain environmental conditions, this coating may develop an amine blush during cure. While this condition will not adversely affect the performance of this coating, amine blush must first be removed and then the coating aggressively sweep blasted prior to applying additional coating. Please contact Tnemec Technical Services for more information.

6.2 STRIPE COATING

Welds, seams, and repaired areas should be given an initial brush coat prior to a full spray application of the first coat to work the material into the surface. This should also apply to all areas inaccessible by spray gun and as necessary to achieve the specified dry film thickness and a surface free of imperfections.

6.3 TANK ARMOR - PLURAL COMPONENT EQUIPMENT

RECOMMENDATION

Tank Armor is applied using a Graco XP70 heated plural component airless spray unit or equivalent. Contact Tnemec Technical Services for recommended equipment modifications.

GRACO XP70 HEATED PLURAL COMPONENT AIRLESS SPRAY

PUMP SIZE	Graco XP70
GUN	Graco XTR-7
TIP ORIFICE	0.021" - 0.029"
ATOMIZING PRESSURE	4500 - 5000 PSI (DYNAMIC)
PAINT LINE	50' - 3/8" (9.5 mm)
STATIC MIXERS	Two - 3/8" x 12 Fold SST Static Mixers One - 1/4" x 12 Fold SST Static Mixer
WHIP LINES	6' - 10' X 1/4"
PRIMARY HEAT (PRT A)	120°F - 140°F (49°C - 60°C)
PRIMARY HEAT (PRT B)	110°F - 120°F (43°C - 49°C)
HOSE HEAT	140°F - 160°F (49°C - 71°C)
MATERIAL TEMP AT GUN	110°F - 120°F (43°C - 49°C)
FILTERS	30 MESH WYE
PURGE TIME	Less than one minute
COMPONENT RATIO	3 (Epoxy) to 1 (Amine)

6.4 PUMP MAINTENANCE

Clean up and purge lines immediately after use with No. 4 Thinner.

7.0 CURING TIME

TEMPERATURE	TO TOUCH	TO HANDLE	IMMERSION
95°F (35°C)	1/2 Hour	2 Hours	16 Hours
75°F (24°C)	3/4 Hour	4 Hours	1 Day
55°F (13°C)	3 Hours	16 Hours	6 Days
35°F (2°C)	5 Hours	24 Hours	12 Days

Note: The above cure schedule provides for immersion service, temporary or full storage of recommended chemical exposures below 100°F (38°C). For high temperature service >100°F (38°C), consult your Tnemec representative or Tnemec Technical Services.

Note: If more than 24 hours elapsed between coats, the Series 335 coated surface must be mechanically abraded before topcoating.

8.0 INSPECTION

8.1 BLAST PROFILE (STEEL)

Refer to Section 4.4 – Preparation of Steel for more information.

8.2 WET FILM THICKNESS MEASUREMENT

Wet film thickness readings for successive coats should be taken as soon as possible at a frequency of at least one per 100 sq. ft. and should be taken so as to avoid surface irregularities that could distort the readings. Readings on corners and in areas of intricate geometry should be taken every 10 sq. ft. to ensure proper wet coverage.

8.3 FINAL INSPECTION - HIGH VOLTAGE DISCONTINUITY (SPARK) TESTING

High voltage discontinuity (spark) testing is recommended to determine the presence and number of discontinuities in the nonconductive Series 335 applied to a conductive surface.

If required by the project specifications, all high voltage discontinuity (spark) testing shall be performed in accordance with the latest version of NACE SP0188.

The Series 335 coating system shall be applied and allowed to cure within the parameters of the corresponding Product Data Sheets. Sufficient curing time of the coating system shall be allowed prior to conducting a holiday test, as indicated by the "To Place in Service" or "Return to Service" duration on the Product Data Sheets. Curing time will vary with surface temperature, air movement, humidity, and film thickness.

For more information on voltage recommendations and curing parameters, reference Tnemec Technical Bulletin No. 03-42 or contact Tnemec Technical Services.

9.0 REPAIR

Where imperfections, discontinuities, or surface defects are present, or if a coating is damaged during inspection, the area in question should be masked and mechanically abraded to provide a consistent finish. Application of an additional brush coat may be necessary.

If immediate repair is not feasible (due to loss of blast), the affected area is to be masked off and repaired following application of the first coat. If welding is involved in the repair procedure, the masked area must measure 6" (15.2 cm) in any direction from the weld. The edges of all masked repaired areas should be feathered using an abrasive cloth or wheel. Prepare the repaired area for coating using the surface

preparation procedures for steel previously outlined in Section 4. Any contamination resulting from the repair must be removed by solvent wiping prior to abrasive blasting.

A record should be kept of all repaired areas using a coordinate system. The repaired area must be spot-blasted and remain free of voids, undercutting and weld splatter and exhibit a minimum 3.0 mils (75 microns) angular anchor profile pattern.

If film defects are suspected to involve a significant void or holiday, or if the film has been damaged to the substrate, repairs may be made using Series 312 touch-up and repair. Please refer to the Series 312 product data sheet for details.

10.0 HEALTH & SAFETY

Tank Armor is for industrial use only and must be installed by qualified coating and lining application specialists only. Paint products contain chemical ingredients which are considered hazardous. Read container label warning and Safety Data Sheet for important health and safety information prior to the use of this product. Keep out of the reach of children.

More detailed health and safety requirements for Series 335 are available in the Safety Data Sheet. Contact your local Tnemec representative for more information.