

SERIES 120 VINESTER

SURFACE PREPARATION & APPLICATION GUIDE

TNEMEC COMPANY INCORPORATED

6800 Corporate Drive, Kansas City, MO 64120 1-800-TNEMEC1 www.tnemec.com

Published techincal data and instructions are subject to change without notice. Contact your Inemec technical representative for current technical data and instructions. Warranty information: The service life of Inemec's coatings will vary. For warranty, limitation of seller's liability, and product information, please refer to Inemec's Product Data Sheets at www.tnemec.com or contact your Inemec Technical Representative. 10/10

S
—
Z
F
Z
0
\mathbf{U}
0 F
0
E 0
0
LE 0
BLE 0
BLE 0
LE 0

1.0	Introduction1
2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 2.10 2.11	Products and Packaging
3.0 3.1 3.2 3.3 3.4 3.5	SteelSurfacePreparation2New Construction2Welds2Existing Contaminated Surfaces2Abrasive Cleaning2Surface Imperfections2
4.0 4.1 4.2 4.3 4.4 4.5	Concrete Surface Preparation
5.0 5.1 5.2 5.3 5.4	Mixing3Series 120 Vinester3Series 218 Mortarclad3Series 217 MortarCrete3Material Application3
6.0 6.1 6.2 6.3 7.0	Application3Steel Surfaces4Concrete Surfaces4Application of Series 2184Application & Equipment - Series 1204
7.1 7.2	Air Spray
8.0	Application Temperatures4
9.0 9.1 9.2	Shelf Life 4 Series 120 - Part A 4 Series 218 & 217 Shelf Life 5
10.0 10.1	Pot Life5Series 120 Vinester5
11.0 11.1	Cure Time5 Recoating5
12.0 12.1 12.2 12.3 12.4 12.5	Inspection5Blast Profile (Steel)5Wet Film Thickness Measurement.5Dry Film Thickness Measurements (Steel) 5Final Inspection - High Voltage.5Recommended Voltages.6

1.0 INTRODUCTION

The procedures outlined in this guide are intended to aid in determining proper surface preparation, mixing, application and inspection methods for Tnemec's Vinester coating and lining materials. Series 120 Vinester is a novolac vinyl ester that exhibits superior protection against organic and inorganic acids and sour crude when stored at elevated temperatures in insulated tanks. It provides splash, spillage and fume protection for structural surfaces and secondary containment. This application guide cannot cover every issue that may be encountered in the field. If you have questions or if issues arise that are not addressed in this guide or on the Product Data Sheet, please contact your Tnemec representative or call 1-800-TNEMEC1 for assistance.

Please review all pertinent Tnemec Product Data Sheets and other corresponding Application Guides. Reference the project specification and compare them with this guide and Product Data Sheet. Resolve any inconsistencies prior to starting work. For additional information consult the recommendations of the International Concrete Repair Institute (ICRI) Guidelines No. 310.1R (formally No. 03730), "Guide for Surface Preparation for Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion," or No. 310.2 (formally No. 03732), "Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Overlays," and the American Concrete Institute (ACI) RAP- Bulletin 6, "Field Guide to Concrete Repair Application Procedures: Vertical and Overhead Spall Repair by Hand Application." Failure to follow good trade practices and recommendations herein may result in decreased material performance.

2.0 PRODUCTS AND PACKAGING

The products that form the core of the Vinester system are:

2.1 SERIES 218 MORTARCLAD

Series 218 MortarClad is a hybrid, cement-based, aggregate-reinforced waterborne epoxy for surfacing, patching and filling voids and bugholes up to ½" deep in concrete substrates. In addition, it also serves as a means to diminish out-gassing problems typically associated with coating concrete when used as a resurfacer at ¹/16" thickness. If environmental conditions dictate, such as high air or substrate temperatures or dry winds, the surface should be "pre-wet" or dampened with potable water. This can be done using a Hudson pump-up sprayer or heavy nap roller cover dampened with potable water.

NOTE: Do not over-saturate the surface. Material can be transferred to the surface by utilizing hydraulic spray equipment (i.e. 11:1 Grover grout pump) followed by trowelling to close the material. For a smoother finished appearance, trowel licks may be reduced by using water to lightly dampen a 1/4" nap roller cover over the sealed Series 218 material. Refer to the Series 218 MortarClad Product Data Sheet for further information.

2.2 SERIES 218 PACKAGING

KIT SIZE	PART A (LIQUID)		PART C (CEMENT SAND)	YIELD (MIXED)
Large (LPK)	1 gallon plastic jug	1 quart plastic jar	42.75 lb. bag with premeasured aggregate	2.8 gallons (10.6 L)

SERIES 218 PACKAGING - CONTINUED

KIT SIZE	PART A (LIQUID)		PART C (CEMENT SAND)	YIELD (MIXED)
Small (SPK)	1 quart plastic jug	1 pint plastic jar	10.7 lbs bag with premeasured aggregate	0.7 gallons (2.6 L)

2.3 SERIES 218 COVERAGE RATES (THEORETICAL)

THICKNESS	KIT SIZE	SQUARE FT	SQUARE METERS
1/16″	LPK	72	6.7
1/16″	SPK	18	1.7

2.4 SERIES 217 MORTARCRETE

Series 217 MortarCrete is a single-component, rapid setting, nonshrinking hydraulic cementitious resurfacer used to restore deteriorated concrete, patching, and filling voids and bugholes from 1/4" to 2" deep in concrete substrates.

Series 217 is packaged in a plastic bag inside a 5 gallon plastic bucket containing 55 lbs (25 kg) of blended specialty cements, aggregates and admixtures.

2.5 SERIES 217 PACKAGING

KIT SIZE	PART A (CEMENT BLEND)	PART B	PART C (SLOWSET)	YIELD (MIXED)
Large (LPK)	55 lbs (25kg)	N/A	Up to (3) three 25 gram bags with premeasured retarding additive	

Note: A trial batch is recommended to adjust the setting time to match jobsite conditions.

2.6 SERIES 217 SPREADING RATES (THEORETICAL)

THICKNESS	SQUARE FEET	THICKNESS	SQUARE METERS		
1/4″	21.6	.635 cm	2		
1/2″	10.8	1.27 cm	1		
3/4″	7.2	1.91 cm	0.7		
]″	5.4	2.54 cm	0.5		
1 1/4″	4.3	3.18 cm	0.4		
1 1/2″	3.6	3.81 cm	0.3		
1 3/4″	3.0	4.45 cm	0.28		
2″	2.7	5.08 cm	0.25		

Approximate Unit Yield and Theoretical Spread Rate based upon 4 quarts (3.8L) of water.

2.7 SERIES 211-217 SLOW SET

Series 211-217 Slow Set is a retarding additive used to slow the setting of Series 217. Series 211-217 is packaged in 0.9 oz (25 g) packets. Up to 3 packets may be used for each unit of Series 217.

2.8 STORAGE & CONDITIONING

Protect Series 218 and Series 217 from moisture; store in dry environment off the ground in unopened containers. Condition product to 65-75°F (18-24°C) 24 hours before use. Material temperatures above or below this range could result in undesirable material working properties.

2.9 SERIES 120-5002 & SERIES 120-5001 VINESTER

Series 120 is a novolac vinyl ester that provides unsurpassed protection against organic and inorganic acids. It also provides splash, spillage fume protection for structural surfaces and and secondary containment. The recommended system includes Series 120-5002 Beige prime coat and Series 120-5001 Gray finish coat. The material may be applied by air or airless spray. See Product Data Sheet for details. Brushing is recommended for small areas only. Use high-quality natural or synthetic bristle brushes.

2.10 SERIES 120 PACKAGING

KIT SIZE	PART A (BASE)	PART B (CATALYST)	YIELD (MIXED)
Large (LPK)	5 gallon can	8 ounce bottle	3 gallons
	(2.95 gallons)	(.05 gallons)	(11.4 L)
Small (SPK)	1 gallon can	4 ounce bottle	1 gallon
	(.98 gallons)	(.02 gallons)	(3.79L)

2.11 SERIES 120 COVERAGE RATES (THEORETICAL)

KIT SIZ	ZE	DRY MILS	WET MILS	SQUARE FT	METERS FT
Large		12.0 - 18.0	20.0 - 25.0	180 - 240	16.8 - 22.2
Small		12.0 - 18.0	20.0 - 25.0	60 - 80	5.6 - 7.4

The Series 120 Vinester system contains a reactive monomer and some loss will occur during application and cure.

3.0 STEEL SURFACE PREPARATION

3.1 NEW CONSTRUCTION

All surfaces should be completely free of oil, grease and other surface contaminants prior to abrasive blasting. Oil and grease should be removed by scraping off heavy deposits and cleaning with suitable solvents, emulsion cleaners, steam or a hot bio-degradable alkaline detergent solution followed by a water rinse.

3.2 WELDS

All welds should be clean and free of spatter, slag or sharp projections. Grind all welds to a smooth, rounded surface free of sharp edges, pinholes, undercuts, recesses and other irregularities.

All welds should be continuous. Skip or intermittent welds will be made continuous by welding. All lap joints and inside corners should receive a continuous fillet weld. All internal bracing, reinforcement and miscellaneous steel with open ends should be capped and sealwelded.

Round all sharp edges to a $\frac{1}{8}''$ minimum radius or greater by grinding,

filing or mechanical sanding. Care should be exercised during this task to ensure that new, sharp edges are not created.

All surfaces should be clean and dry before proceeding with work.

3.3 EXISTING/CONTAMINATED SURFACES

Unlined tanks or previously-lined tanks require checking for contaminant presence and complete removal prior to abrasive blasting. Water soluble contaminants such as chlorides, sulfates, acids, alkalies, 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. For proper identification procedures and removal methods, contact Tnemec Company, Inc.

3.4 ABRASIVE CLEANING

All steel surfaces to receive Tnemec's Vinester materials should be abrasive blasted to a white metal cleanliness in accordance with SSPC-SP5/NACE 1 White Metal Blast Cleaning. A minimum 3.0 mil anchor pattern is required.

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 minimum 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 Testex-Replica profile tape prior to the application of the prime coat. Profile readings should be recorded on Testex-Replica tape and retained by the applicator for verification as part of the Quality Assurance file (reference NACE RP0287).

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.

3.5 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.

4.0 CONCRETE SURFACE PREPARATION

4.1 NEW CONSTRUCTION

Allow new concrete to cure a minimum of 28 days. Verify dryness by testing for moisture with a "plastic film tape-down test" (reference ASTM D4263). If necessary for testing horizontal surfaces, perform "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride" (reference ASTM F1869). Moisture content is not to exceed three pounds per 1,000 sq. ft. in a 24-hour period.

4.2 EXISTING/CONTAMINATED SURFACES

The concrete should be inspected for porosity, exposed aggregate, cracks, laitance and surface contaminants. Removal of chemical contaminants must be accomplished before any other surface preparation takes place.

Chemically-contaminated concrete must be neutralized before coating. If the surface is acidic, salt formation will take place; these salts should be mechanically removed by abrasive blasting to sound concrete. If contaminated with alkalies, concrete must be cleaned with steam or with hot detergent wash. Solvents can be utilized to remove oil and grease from the surface. All surfaces should be clean and dry before proceeding with work (reference SSPC-SP13/NACE 6). For specific detection and additional information, contact Tnemec Company, Inc.

4.3 ABRASIVE CLEANING

Abrasive blast or mechanically abrade to remove laitance, form release agents, curing compounds, sealers and other contaminants and to provide surface profile (reference SSPC-SP13/NACE 6, ICRI CSP5). Blasting must be performed sufficiently close to the surface to open up surface voids, bugholes, air pockets and other subsurface irregularities. Dry, oil-free air must be used for the blasting operation (reference ASTM D4285).

Large voids, bugholes and other cavities should be filled with the recommended filler or surfacer.

All dust and blasting debris dust should 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.

4.4 SURFACE IMPERFECTIONS

All concrete surfaces should be filled and sealed prior to application of the Series 120 Vinester system.

4.5 OUT-GASSING

Out-gassing must always be considered a possibility with any concrete substrate. A number of means exist to either eliminate or reduce out-gassing. First, application should be accomplished during times when the surface temperature of the concrete is stable or in a descending pattern. In addition, use of primers and surfacing agents can help reduce out-gassing. Series 218 MortarClad was specifically designed to minimize this problem. Out-gassing can be minimized when using Series 120 - 5002 Vinester direct to concrete by spray applying a "mist coat" and allowing the concrete to out-gas for several minutes. Then back rolling should be immediately followed by spraying the full coat of 120-5002. Alternately, rolling a coat of Series 120 - 5002 Vinester with the recommended roller cover can also minimize out-gassing prior to spray application at greater thicknesses.

5.0 MIXING

5.1 SERIES 120 VINESTER

Tnemec's Vinester materials are supplied in one-gallon kits, premeasured and packaged for proper mixing. Three-gallon kits are available upon special request. Material must be mixed as supplied.

Mix Part A (base) thoroughly, making sure no pigment remains on the bottom of the can. Add the Part B (catalyst) slowly and continue to agitate thoroughly until entire contents are properly mixed. Care should be exercised so as not to entrap air in the mixed materials. Use Tnemec No. 19 Thinner for thinning. For air or airless spray, thin up to 3% or 4 ounces per gallon if needed for good atomization.

Mixed material should be used as soon as possible after mixing. No induction time is necessary. Do not use mixed material beyond pot life limits.

5.2 SERIES 218 MORTARCLAD

Mix entire kits as supplied. For smaller applications, smaller kits are available. *NOTE*: Mixing less than a full kit can result in miscatalization, improper film build and variant cure times. The aggregate for Series 218 is supplied by weight, not by volume, so determining proper portions can be extremely difficult.

IMPORTANT: Do not split kits.

Pour Part A liquid into clean empty pail. Under agitation slowly add Part B liquid. When blended, slowly sift Part C powder while continuing agitation. Do not dump all of the Part C into the liquids at one time. Mix for 2 minutes or until the cement-sand is thoroughly wetted and a smooth consistency is obtained.

5.3 SERIES 217 MORTARCRETE

Refer to Series 217 Surface Preparation and Application Guide for complete mixing instructions.

6.0 APPLICATION

6.1 STEEL SURFACES

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.

Themec's Vinester coating system (Series 120 - 5002 Beige Primer and Series 120 - 5001 Gray Finish) should be applied to all properly prepared surfaces with a total dry film thickness of 24.0 - 36.0 mils in a minimum of 2 coats (12.0 - 18.0 dry mils per coat).

6.2 CONCRETE SURFACES

Series 120 is recommended for protection of concrete subject to splash, spillage and fume exposure to acids and other chemicals.

Recommendations are limited depending on the chemical nature of the immersion liquid. Concrete is highly reactive to acids and other strong chemicals, therefore a pinhole-free system is required to provide protection of the concrete substrate.

Series 218 and Series 217 may be used to fill all voids and/or surface imperfections in the concrete substrate prior to the application of Series 120 Vinester.

6.3 APPLICATION OF SERIES 218 MORTARCLAD

Stiff, steel, concrete finishing trowels, broad knives and rubber floats are recommended.

NOTE: Set times for these products are quicker than standard cement mortars. Series 218 MortarClad can be applied using hand trowels and mortar hawks.

Maximum performance is obtained when Series 218 MortarClad is applied to form a continuous, void-free film. When used as a surfacer, apply with a rubber float or trowel. Care should be taken to assure material is forced into and fills voids and surface irregularities. When used as a filler, remove excess Series 218 before the material sets up by striking off with a metal straight edge or rubber float, leaving the material flush with the surface.

6.4 APPLICATION OF SERIES 217 MORTARCRETE

Hand troweling can be accomplished using steel concrete finishing trowels, broad knives, rubber & wooden floats. Reference the Series 217 Surface Preparation & Application Guide for more details.

7.0 SERIES 120 - APPLICATION EQUIPMENT

7.1 AIR SPRAY - SUGGESTED EQUIPMENT OR EQUAL

GUN	DeVilbiss JGA
FLUID TIP	E
AIR CAP	78
AIR HOSE ID	5/16" or 3/8" (7.9 or 9.5 mm)
MAT'L HOSE ID	3/8" or 1/2" (9.5 or 12.7 mm)
ATOMIZING PRES	60 - 80 psi (4.1 - 5.5 bar)
POT PRESSURE	10 - 20 psi (0.7 - 1.4 bar)

Low temperatutes or longer hoses require higher pot pressure.

Airless Spray: Use appropriate tip and atomizing pressure for equipment, applicator technique and weather conditions.

7.2 AIRLESS SPRAY - SUGGESTED EQUIPMENT OR EQUAL

TIP ORIFICE	0.015" - 0.021" (380 - 535 microns)
ATOMIZING PRES	2400 - 3000 psi (165 - 207 bar)
MAT'L HOSE ID	1/4" or 3/8" (6.4 mm or 9.5 mm)
MANIFOLD FILTER	60 mesh (250 microns)

Spray Recommendations: Material should be spray-applied in a (cross-hatch) multi-pass system with 50% overlap between passes. Care should be exercised to prevent excessive film build on edges, corners and protrusions.

Brushing Recommendations: Brushing small areas should be conducted with a natural bristle brush. However, brushing this material will generally not allow sufficient film thickness in one pass. It is important, therefore, with repair areas or edges on intricate geometries to brush the material in several coats, allowing each to dry thoroughly before applying successive coats.

NOTE: Two or more coats may be required to obtain recommended film thicknesses.

8.0 APPLICATION TEMPERATURES

Surface and Ambient: Minimum 60°F, Maximum 110° F

The surface should be dry and at least 5°F above the dew point.

At surface and ambient temperatures below 60°F, Series 120 will not cure properly or obtain maximum chemical resistance. Following application, the surface temperature must be held at or above 60°F until the coating surface is tack free (approximately 8 hours at 60°F surface temperature, 6 hours at 70°F surface temperature, 4 hours at 80°F surface temperature) to avoid incomplete polymerization.

At relative humidities above 75%, the cure of this coating system may be retarded. It is recommended that additional precautions be taken to ensure that adequate forced-air ventilation exists.

This product should not be applied below 60°F material temperature.

9.0 SHELF LIFE

9.1 SERIES 120 VINESTER - PART A

STORAGE TEMPERATURE	SHELF LIFE
35°F - 49°F (2°C - 9°C)	3 MONTHS
50°F - 79°F (10°C - 26°C)	2 MONTHS
80°F - 90°F (27°C - 32°C)	1 MONTH

Do not store at temperatures below 35°F or above 90°F.

NOTE: Due to the reactive nature of vinyl ester resins and the corresponding limited shelf life, expeditious use of this product is recommended. Since jobsite storage conditions are beyond our control, this product is non-returnable.

Part B: 12 months at recommended storage temperature.

9.2 SERIES 218 & 217 SHELF LIFE

12 months in original, unopened packing at recommended storage temperature. Discard any material exhibiting clumping or balling.

10.0 POT LIFE

10.1 SERIES 120 VINESTER

TEMPERATURE	POT LIFE	
65°F (18°C)	3 - 5 HOURS	
75°F (24°C)*	1 ½ - 2 ½ HOURS	

*At higher temperatures, pot life will decrease (use caution in spray equipment). In hot weather, material should be cooled to 65°F - 80°F prior to mixing and application to avoid shortened pot life and improve workability.

11.0 CURING TIME

PRODUCT	TEMP.	HANDLE	RECOAT	IMMERSION
120-5002	75°F (24°C)	6 HOURS	6 HRS MIN/72 HRS Max	72 HOURS
120-5001	75°F (24°C)	4 HOURS	6 HRS MIN/72 HRS Max	72 HOURS

If more than 72 hours have elapsed between coats, the coated surface must be scarified to improve intercoat adhesion. The cure rate will be affected by temperature, humidity and degree of air circulation over the surface.

11.1 RECOATING

It is recommended that for large, vertical surfaces such as stacks and storage vessels, surface preparation and application should proceed downward in drops in order to provide full prime coat coverage prior to application of subsequent coats. Following the recommended curing time, the first coat is to be solvent-wiped and/ or completely washed down with clean water if necessary to remove surface contaminants. Successive coats may then be applied, provided the surface is clean, dry and free of contaminants.

12.0 INSPECTION

12.1 BLAST PROFILE (STEEL)

Degree of surface cleanliness and blast profile of steel surfaces should conform to specifications detailed in Section 3 - Surface Preparation of Steel. Reference SSPC or NACE visual standards and consult Testex tape records of anchor pattern for verification.

12.2 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.

12.3 DRY FILM THICKNESS MEASUREMENT (STEEL)

Dry film thickness readings of steel surfaces should be taken prior

to the application of successive coats with a nondestructive, magnetic-type gauge in accordance with SSPC-PA-2. Total system dry film thickness should be a nominal 30.0 mils, with acceptable minimums at 24.0 and maximums at 36.0 mils. Corners and areas of intricate geometry will require more frequent readings. All measurements should be recorded and retained in the job file for later verification.

12.4 FINAL INSPECTION - HIGH VOLTAGE DISCONTINUITY (SPARK) TESTING

If required by the contract specifications, high voltage discontinuity (spark) testing may be used to determine the presence and number of discontinuities in the nonconductive Series 120 Vinester coating system applied to a conductive surface.

All high voltage discontinuity (spark) testing should be performed in accordance with NACE SP0188 and the procedures outlined herein.

The Series 120 Vinester coating system should be applied and allowed to cure within the parameters of the corresponding Product Data Sheets. Sufficient curing time of the coating system should be allowed prior to conducting a holiday test, as indicated by the, "To Place in Service," duration on the Product Data Sheets. Curing time will vary with surface temperature, air movement, humidity and film thickness.

If the substrate is incompatible or if thickness constraints are not applicable for a non-destructive dry film thickness gauge, measurements of the coating system thickness are to be performed during application of each system component using a wet film gauge, feeler gauge or other measurement device that can accurately measure the coating wet film thickness. These coating measurements are to be tabulated to determine the total system thickness.

The high voltage discontinuity (spark) testing voltage can be calculated using the tabulated total coating system thickness (in mils) multiplied by 100 volts DC. Never exceed the recommended 100 volts DC per mil, for excessive voltage may produce a holiday in the coating film. All high voltage discontinuity (spark) testing should be performed using a Tinker & Rasor model AP/W Holiday Detector.

To perform holiday testing, attach a ground wire from the instrument ground output terminal to the conductive substrate and ensure proper electrical contact. Test conductivity by attaching the instrument ground wire to rebar or other metallic ground permanently installed in the concrete and touch the electrode to the bare concrete. If metallic ground is not visible, the ground wire can be placed directly against bare concrete surface and weighted with a damp cloth and paper sand-filled bag. Make contact with the exploring electrode on the conductive substrate to verify the instrument is properly grounded. If the test proves negative, determining discontinuities with a high voltage spark test will be ineffective. Under no circumstances should the voltage be increased above the recommended voltage potential.

12.5 RECOMMENDED VOLTAGES FOR HIGH VOLTAGE SPARK TESTING WITH TINKER & RASOR MODEL AP/W

TOTAL DRY FILM THICKNESS (MILS)	VOLTAGE (V)
20-24	2,500
25-29	3,000
30-39	3,500
40-47	5,000
48-59	6,000
60-69	7,500
70-79	8,500

Holiday testing of repaired areas should be performed using the same testing procedures as outlined above.

If utilizing alternate high voltage DC holiday detectors, never exceed the recommended 100 volts DC per mil because excessive voltage may produce a holiday in the coating film.

13.0 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 film defects are suspected to involve a significant void or holiday, or if the film has been damaged to the substrate, contact your Tnemec representative or call Tnemec Technical Service at 1-800-TNEMEC1 for specific recommendations.