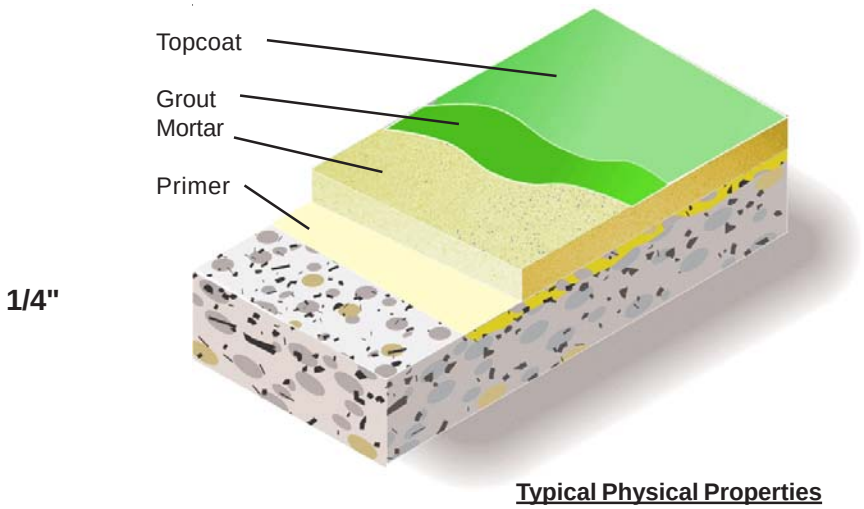
THE SHERWIN - WILLIAMS COMPANY

General Polymers®
High performance floor systems

TPM® #115 SPARKPROOF CONDUCTIVE

General Polymers TPM #115 SPARKPROOF / CONDUCTIVE SYSTEM is a high build protective surfacing utilizing a conductive epoxy based mortar, high build grout and selected topcoats to provide sparkproof static dissipating floors within the required ohms resistance range.



Advantages
- 25,000 - 1,000,000 ohms floor resistance range protects sensitive equipment
- Durable wear resistant
- Seamless - no joints to harbor contaminants

Uses
- Electronics production
- Power plants
- Clean rooms
- Computer rooms
- Aircraft hangars
- Military munitions storage

Typical Physical Properties

Conductivity NFPA#99	Resistance range of 25,000 - 1,000,000 ohms
Abrasion Resistance ASTM D 4060	0.1 grams lost
Compressive Strength ASTM D 695	11,000 psi
Tensile Strength ASTM D 638	6,000 psi
Resistance to Elevated Temperatures MIL-D-3134J	No slip or flow at required temperature of 158ºF
Flexural Strength ASTM D 790	10,000 psi
Hardness, Shore D ASTM D 2240	80/75
Adhesion ACI 503R	335 psi (100% concrete failure)
Flammability ASTM D 635	Self-extinguishing over concrete
Impact Resistance MIL-D-3134J	Withstands 16 ft/lbs no cracking, delamination

Installation

The following information is to be used as a guideline for the installation of the TPM#115 CONDUCTIVE / SPARKPROOF SYSTEM. Contact the Technical Service epartment for assistance prior to application.

Surface Preparation - General

General Polymers systems can be applied to a variety of substrates, if the substrate is properly preapred. Preparation of surfaces other than concrete will depend on the type of substrate, such as wood, concrete block, quarry tile, etc. Should there be any questions regarding a specific substrate or condition, please contact the Technical Service Department prior to starting the project. Refer to Surface Preparation (Form G-1).

Surface Preparation - Concrete

Concrete surfaces shall be abrasive blasted to remove all surface contaminants and laitance. The prepared concrete shall have a surface profile equal to CSP 4-6. Refer to Form G-1.

After initial preparation has occurred, inspect the concrete for bug holes, voids, fins and other imperfections. Protrusions shall be ground smooth while voids shall be filled with a General Polymers system filler. For recommendations, consult the Technical Service Department.

Temperature

Throughout the application process, substrate temperature should be 50ºF - 90ºF. Substrate temperature must be at least 5ºF above the dew point. Applications on concrete substrates should occur while temperature is falling to lessen offgassing. The material should not be applied in direct sunlight, if possible.

Application Information

Material	Mix Ratio	Theoretical Coverage Per Coat	Packaging
Primer			
3524	1:1	250 sq. ft. / gal.	2 or 10 gals
Wait 30 minutes for induction, restir then apply			
Binder			
3561C	4:1	18 sq. ft. / 1-¼ gal	1.25 - 25 gals
5115C		25 lbs. / 1-¼ gal	25 lbs.
Grout			
3524	1:1	250 sq. ft. / gal.	2 or 10 gals
Wait 30 minutes for induction, restir then apply			
Seal Coat			
3525E	2:1	200 sq. fl. / gal.	2 or 10 gals

Materials shall be applied in compliance with maufacturer's recommended installation procedures.

Static Control Floors

Static control flooring can be defined as a flooring system that can drain and/or dissipate static charges by grounding personnel, equipment or other objects contacting the floor surface or that controls the generation and accumulation of static charges. The resistance to the movement of electrons across the material's surfaces defines static control floorings into the following two categories:

i) Conductive Floor has a resistance of 2.5×10^4 - 10^6 ohms per 3 ft. It can drain static charge dissipating a 5,000 - volt charge to zero in 0.05 seconds.

ii) Static Dissipative Floor has a resistance of 10^6 - 10^9 ohms per 3 ft. It adds no static electricity to the enviroment and drains off a 5,000 - volt charge to zero in less than 0.2 seconds.

A conductive floor has a much lower electrical resistance than a dissipative floor. It will carry the static charges to a ground quickly and efficiently as to prevent accidental discharge and ignition. If the floor is too conductive, an operator on the floor can become too effectively grounded and will suffer electrical shock. For this reason the NFPA requires all flooring surfaces to have a minimum resistance of 25,000 ohms. Frequent contact between tools and equipment, or dropping the tools on the floor, will cause spark and ignition. For those circumstances, a sparkproof conductive flooring system is highly recommended. The rapid rate of charge dissipation of conductive flooring can create a magnetic field which can present a problem for manufacturers of electronic components.

Dissipative flooring systems have greater resistance to electric current flow than conductive floorings. At a working environment dealing with high test voltages, such as facilities where electronic components are manufactured or assembled, a dissipative floor should be installed so that the static charges can be gradually transferred to ground, protecting personnel from electrical shock while at the same time protecting sensitive electronic equipment.

Conductive Flooring Measurement Guide

There are three test standards available for the evaluation of static dissipative or conductive floors and they are ANSI/ESD-S7.1, ASTM F 150 and NFPA 99 (56A). These test methods describe three types of measurements to be taken, which are summarized below:

(1) Surface-to-surface resistance — Two 2.5 inch diameter electrodes, each weighing 5 lbs, are placed 3 ft apart on the floor. Apply the prescribed voltage (either 500VDC for conductive flooring or 100VDC for static dissipative flooring) and take the readings 5 seconds after the application of voltage or once the reading has reached equilibrium. The resistance in ohms is read on a properly calibrated Megohmmeter ("megger").

(2) Point-to-groundable point resistance---An electrode with a 2.5 inch diameter and a weighing 5 lbs is connected to a Megohmmeter and placed on the surface being tested. The other megger lead is connected directly to a groundable point on the surface being tested.

(3) Surface resistance — Two parallel metal electrodes of equal length and cross section are placed on the surface being tested. The distance between the electrodes should be the same as the length of the electrodes. Resistance is read on a Megohmmeter connected to the two electrodes and is expressed in ohms/square.

For quality control and lab procedures, the surface-to-surface test is most convenient. The measurements of point-to-groundable point test on smaller lab samples usually vary considerably from readings on a practical large floor. Based on these test results a facility manager can check if the flooring conforms to the specification when initially installed and track continual performance of the floor periodically.

NFPA 99 requires 5 measurements in each room and the average of the five readings is used as to determine the resistance level. ANSI/ESD standards also require 5 measurements per room and a minimum of 5 tests per 5,000 square feet for larger areas. At least 3 of the 5 readings must be conducted in areas of wear due to traffic, chemical or water exposure. The ANSI/ESD and NFPA standards require testing records to include date, temperature, humidity, testing voltage, duration of the test and the equipment used.

Maintenance of Resinous Static Control Floors

Providing floors with good maintenance is always the best solution to lasting service life for any type of floor. The standard of NFPA 99 describes appropriate maintenance for a conductive floor to maintaining conductive property through its service life. There are four maintenance guidelines for static dissipative floors.

i) The surface of conductive or dissipative floors shall not be insulated by a film of oil or wax. Any waxes, polishes, or dressings used for maintenance of conductive floors shall not adversely affect the conductivity of the floor.

ii) Floors that depend upon applications of water, salt solutions, or other treatment of a nonpermanent nature for their conductivity are not acceptable.

iii) Cleaning instructions for conductive and dissipative floors shall be established, such as a daily basic cleaning, non-abrasive brush or pads being used and requirements for cleaners, then carefully followed to assure that conductivity characteristics of the floor are not adversely affected by such treatment.

iv) The floor's resistance shall be periodically tested to ensure it still falls the range as initially specified.

Primer - Conductive Primer
Mixing and Application

1. Premix 3524A (resin) and 3524B (hardener) separately, using a low speed drill and Jiffy mixer. Mix for one minute and until uniform, exercising caution not to whip air into the material.

2. Add 1 part 3524A (resin) to 1 part 3524B (hardener) by volume. Mix with low speed drill and Jiffy mixer for three minutes and until uniform. Wait 30 minutes for induction period, restir and apply using a short nap roller at a rate of 250 square feet per gallon (6 WFT mils). Allow to cure at least 1 hour prior to mortar placement but no more than 16 hours.

3. Inspect primer coat prior to application of slurry. Test surface resistance in accordance with NFPA 99. Resistance range should be less than 150,000 ohms. If deviation from this range occurs, consult the Technical Service Department immediately.

Mortar
Mixing and Application

1. Premix 3561C A and B components separately using a low speed drill and Jiffy mixer. Mix for one minute and until uniform, excerising caution not to whip air into the materials.

2. Add 4 parts 3561CA (4 quarts resin) to 1 part 3561CB (1 quart hardener) by volume. Mix with a low speed drill and Jiffy mixer for three minutes and until uniform. Slowly add 25 lbs. of 5115C aggregate mix an additional one minute or until material is wet out. Apply using a flat steel trowel. Allow to cure overnight.

Grout Coat
Mixing and Application

1. Premix 3524A (resin) and 3524B (hardener) separately, using a low speed drill and Jiffy mixer. Mix for one minute and until uniform, exercising caution not to whip air into the material.

2. Add 1 part 3524A (resin) to 1 part 3524B (hardener) by volume. Mix with low speed drill and Jiffy mixer for three minutes and until uniform. Wait 30 minutes for induction period, restir and apply using a short nap roller at a rate of 250 square feet per gallon (6 WFT mils). Allow to cure no more than 16 hours.

3. Inspect primer coat prior to application of seal coat. Test surface resistance in accordance with NFPA 99. Resistance range should be less than 150,000 ohms. If deviation from this range occurs, consult the Technical Service Department immediately.

Seal Coat
Mixing and Application

1. Inspect base coat prior to application of seal coat. Test surface resistance in accordance with NFPA 99. Average resistance range should be 25,000 - 1,000,000 ohms. If deviation from this range occurs, consult the Technical Service Department immedicately.

2. Premix 3525EA (resin) using a low speed drill and Jiffy mixer. Mix for one minute and until uniform, exercising caution not to whip air into the materials.

3. Add 2 parts 3525EA (resin) to 1 part 3525EB (hardener) by volume. Mix with low speed drill and Jiffy mixer for three minutes and until uniform. Apply using a squeegee or short nap roller at a spread rate of 200 sq. ft. per gallon to yield 8 mils WFT. **Strictly adhere to published coverage rates.** Allow to cure at least 24 hours before opening to light foot traffic.

Application Equipment

Brush / Roller

Use 1/2" phenolic core rollers and professional quality, medium stiff natural bristle brushes.
with no puddles making sure of uniform coverage.

Cleanup

Clean up mixing and application equipment immediately
after use. Use toluene or xylene. Observe all fire and health precautions when handling or storing solvents.

Safety

Refer to the MSDS sheet before use. All applicable federal, state, local and particular plant safety guidelines must be followed during the handling and installation and cure of these materials.
Safe and proper disposal of excess materials shall be done in accordance with applicable federal, state, and local codes.

Material Storage

Store materials in a temperature controlled environment (50ºF - 90ºF) and out of direct sunlight.
Keep resins, hardeners, and solvents separated from each other and away from sources of ignition. One year shelf life is expected for products stored between 50ºF - 90ºF.

Maintenance

Occasional inspection of the installed material and spot repair can prolong system life. For specific information, contact the Technical Service Department.

Shipping

- Destinations East of the Rocky Mountains are shipped F.O.B. Cincinnati, Ohio.
- Destinations West of the Rocky Mountains are shipped F.O.B. Victorville, California.

For specific information relating to international shipments, contact your local sales representative.

Disclaimer

The information and recommendations set forth in this document are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product(s) offered at the time of publication. Published technical data and instructions are subject to change without notice.
Consult www.generalpolymers.com to obtain the most recent Product Data information and Application instructions.

Warranty

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams, NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.