

PRODUCT DESCRIPTION

Stonshield ESD is a nominal 2 mm/80 mil, seamless, conductive, decorative floor system which provides outstanding static control properties and durability. Stonshield ESD is designed for areas where ESD sensitive components are present and where there is increased traffic and loading.

It is comprised of:

Standard Primer

A two-component, penetrating, epoxy primer

Stonshield Conductive Undercoat

A two-component, conductive epoxy formulation consisting of resin and curing agent

Stonshield ESD Aggregate

Brightly colored, quartz broadcast aggregate combined with conductive elements

Stonshield Conductive Sealer

A three-component, high-performance, conductive, UV resistant, clear epoxy sealer

USES, APPLICATIONS

Typical applications for Stonshield ESD include: loading docks, traffic aisles, AGV aisles, electronic parts assembly, maintenance and repair shops, server assembly, paint booths, and pharmaceutical processing and packaging. Stonshield ESD is also perfect for static control applications which also require chemical, impact, and abrasion resistance.

SYSTEM OPTIONS

Thickness

Stonshield HRI Base can be applied if the substrate requires patching or leveling. This system will have a nominal thickness of 3/16 in./5 mm.

Note: When applying the 5 mm system the full Stonshield ESD system is required. This includes the Standard Primer Broadcast over the HRI Base prior to the Conductive Undercoat application. This avoids soak-in and ensures the full thickness of the system.

Moisture Barrier

To ensure long-term adhesion to concrete slabs in the absence of a proper vapor barrier, or where moisture transmission is a problem, the use of Stonhard's Stonfil OP2 grouting system or Stonshield MVT is recommended with strict adherence to application instructions.

PHYSICAL CHARACTERISTICS

Tensile Strength	1,600 psi
(ASTM D-638)	after 7 days
Flexural Strength	4,000 psi
(ASTM D-790)	
Flexural Modulus of Elasticity	5.0 X 10 ⁶ psi
(ASTM D-790)	
Impact Resistance	>160 in./lbs.
(MIL-D-2794)	
Abrasion Resistance	0.06 gm max. weight loss
(ASTM D-4060, CS-17)	
VOC Content	12 g/l - undercoat
(ASTM D-2369)	<5 g/l - sealer
Slip Resistance Index	Dry: 0.96
(ASTM F-1679)	Wet: 0.93
Flammability	Class I
(ASTM E-648)	
Linear Coefficient of Thermal Expansion	1.8 x 10 ⁻⁵ in./in.°C
(ASTM C-531)	
Water Absorption	0.1%
(ASTM C-413)	
Heat Resistance Limitation	140°F/60°C
	(for continuous exposure)
	200°F/93°C
	(for intermittent spills)
Cure Rate	24 hours for foot traffic
(@ 77°F/25°C)	48 hours for normal operations

PACKAGING

Stonshield ESD is packaged in units for easy handling. Each unit consists of:

Stonshield Conductive Undercoat

- 1 carton containing:
 - (2) 1 gallon pails of Amine
 - (2) 2 gallon pails of Resin

Stonshield ESD Aggregate

- 9 individual bags of colored quartz aggregate
- 1 carton containing:
 - 6 bags of conductive broadcast elements

Note: The coverage for the first Standard Primer broadcast is 100 sq. ft. per bag and does not require the addition of the conductive broadcast elements.

Stonshield Conductive Sealer

1.5 cartons, each containing:

- (2) 1 gallon cans of Amine
- (2) 1 gallon cans of Resin
- (2) 1 oz. vials of conductive fibers

COVERAGE

Each unit of Stonshield ESD will cover approximately 300 sq. ft./27.9 sq. m of surface at a 2 mm/80 mil nominal thickness.

STORAGE CONDITIONS

Store all components of Stonshield ESD between 60 to 85°F/16 to 30°C in a dry area. Avoid excessive heat and do not freeze. The shelf life is three years in the original, unopened container.

COLOR

Stonshield ESD is available in 15 standard colors. Refer to the Stonshield Color Sheet.

SUBSTRATE

Stonshield ESD is suitable for application over properly prepared concrete, wood or steel surfaces. It is not recommended for use over asphalt, mastic, gypsum-based products, brick or painted surfaces. These must first be removed by mechanical means to expose the substrate prior to overlayment.

SUBSTRATE PREPARATION

Proper preparation is critical to ensure an adequate bond and system performance. The substrate must be dry and properly prepared utilizing mechanical methods. Questions regarding substrate preparation should be directed to your local Stonhard representative or Technical Service.

APPLICATION

Application of the Stonshield ESD system is accomplished as follows:

1. Standard Primer is mixed and applied to the floor with a squeegee and a nap roller. Stonshield Aggregate is broadcast into the wet primer using a special Stonhard Spraycaster. Allow 8 hours to cure and sweep off excess aggregate.
2. Stonshield Conductive Undercoat is mixed just prior to use in accordance with prescribed directions. It is applied to the floor with a squeegee and medium nap roller.
3. The Stonshield Aggregate is mixed with the conductive elements and is then broadcast into the wet Undercoat using the special Stonhard Spraycaster. Allow 8 hours to cure, then sweep off the excess aggregate. Do not vacuum.
4. Stonshield Conductive Sealer is mixed and applied using a rubber squeegee and then rolled using a medium nap roller. It is then finish-rolled with a texture roller. Allow 12 hours to cure.

STATIC CONTROL PROPERTIES

Stonshield ESD has been specifically designed to comply with the ANSI/ESD S20.20 specification for the protection of electrical and electronic parts, assemblies and equipment.

Surface Resistance <1.0x10⁸ ohms(Ω)
(ESD-S7.1)

Body Voltage Generation <100 volts*
(ESD STM97.2)

**Body Voltage Generation is not solely a function of flooring conductivity but is a combination of many factors, including footwear and environmental conditions. Your specific environment and choice of footwear may yield slightly different results.*

Electrostatic Discharge (ESD) flooring has a variety of applications from microchip manufacturing to military ordinance. Therefore, each facility may have unique resistance requirements based on their individual ESD programs. It is important to identify the resistance requirements and test method used for each project prior to installing any ESD flooring.

5. Apply the second coat of Stonshield Conductive Sealer in the same fashion as the first.

Refer to the Stonshield ESD Directions for further details.

ELECTRICAL TESTING

Once the conductive undercoat/conductive broadcast layer is tack-free, it must be tested for proper conductivity. Point-to-point and point-to-ground readings should be taken and all values should fall below 1.0x10⁸ ohms(Ω).

The floor must also be tested after each application of conductive sealer. Once the conductive sealer is tack-free, point-to-point and point-to-ground readings should be taken. All values must fall below 1.0x10⁸ ohms(Ω).

Note: Stonhard tests all floors in accordance with the ESD S7.1 test method. Various other ESD standards and test methods are available and they each have their own unique parameters. Please contact the Stonhard's technical service department if you wish to use a different test method.

RECOMMENDATIONS

- DO NOT attempt to install material if the temperature of Stonshield ESD components and substrate are not within 60 to 85°F/16 to 30°C. **The cure time and application properties of the material are severely affected at temperatures outside of this range.**
- DO NOT use water or steam in the vicinity of the application. **Moisture can seriously affect the working time and other properties.**
- Avoid contact with all liquid amine and resin as they may cause skin and/or eye irritation.

PRECAUTIONS

- Solvents are recommended for clean up of the unreacted Stonshield ESD material. The reacted material will require mechanical means of removal.
- Use these materials only in strict accordance with manufacturer's recommended safety procedures. Dispose of waste materials in accordance with government regulations.
- The use of safety glasses and impervious gloves is required during application.
- In case of contact, flush the area with copious amounts of water for 15 minutes and seek medical attention. Wash skin with soap and water.
- Use only with adequate ventilation.

NOTES

- Procedures for maintenance of the flooring system during operations are described in the Stonkleen Floor Cleaning Procedures Brochure.
- Safety Data Sheets for Stonshield ESD are available on line at www.stonhard.com under Tech Info or upon request.
- Specific information regarding chemical resistance is available in the Stonshield Chemical Resistance Guide.
- A staff of technical service engineers is available to assist with installation or to answer questions related to Stonhard products.
- Requests for technical service or literature can be made through local sales representatives and offices, or corporate offices located worldwide.
- The appearance of all floor, wall and lining systems will change over time due to normal wear, abrasion, traffic and cleaning. Generally, high gloss coatings are subject to a reduction in gloss, while matte finish coatings can increase in gloss level under normal operating conditions.
- Surface texture of resinous flooring surfaces can change over time as a result of wear and surface contaminants. Surfaces should be cleaned regularly and deep cleaned periodically to ensure no contaminant buildup occurs. Surfaces should be periodically inspected to ensure they are performing as expected and may require traction-enhancing maintenance to ensure they continue to meet expectations for the particular area and conditions of use.

IMPORTANT:

Stonhard believes the information contained here to be true and accurate as of the date of publication. Stonhard makes no warranty, expressed or implied, based on this literature and assumes no responsibility for consequential or incidental damages in the use of the systems described, including any warranty of merchantability or fitness. Information contained here is for evaluation only. We further reserve the right to modify and change products or literature at any time and without prior notice.

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