PRODUCT DESCRIPTION
Stonshield ESD is a nominal 2 mm, 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 coloured, quartz broadcast aggregate combined with conductive elements

Stonshield Conductive Sealer

Epoxy Option - Stonkote CE4
A two-component, high performance, UV resistant, clear epoxy sealer.

Urethane Option - Stonseal CA7
A two-component, high-solids, UV resistant, clear, aliphatic, polyaspartic urethane 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 levelling. This system will have a nominal thickness of 5 mm.

PHYSICAL CHARACTERISTICS

Tensile Strength (ASTM D-638)	11 N/mm^2 after 7 days
Flexural Strength (ASTM D-790)	28 N/mm^2
Flexural Modulus of Elasticity (ASTM D-790)	3.5 X 10^5 N/mm^2
Impact Resistance (MIL-D-2794)	>18 N/m
Abrasion Resistance (ASTM D-4060, CS-17)	0.06 gm max. weight loss
VOC Content (ASTM D-2369)	68 g/l - undercoat 79 g/l - sealer
Slip Resistance Index (ASTM F-1679)	Dry: 0.96 Wet: 0.93
Flammability (ASTM E-648)	Class 1
Linear Coefficient of Thermal Expansion (ASTM C-531)	3.2 x 10^{-5} mm/m˚C
Water Absorption (ASTM C-413)	0.1%
Heat Resistance Limitation	60˚C (for continuous exposure) 93˚C (for intermittent spills)
Cure Rate (@ 25˚C)	24 hours for foot traffic 48 hours for normal operations

Note: The above physical properties were measured in accordance with the referenced standards. Samples of the actual floor system, including binder and filler, were used as test specimens. All sample preparation and testing is conducted in a laboratory environment, values obtained on field applied materials may vary and certain test methods can only be conducted on lab-made test coupons.

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.

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

Stonshield Conductive Undercoat
0.5 carton containing:
4 bags pails of Amine
(2) 10 litre pails of Resin

Stonshield ESD Aggregate
4.5 individual bags of coloured quartz aggregate (20kg)
1 carton containing:
6 bags of conductive broadcast elements

Note: The coverage for the first Standard Primer broadcast is c.a. 18.6 m^2 per 20 kg bag and does not require the addition of the conductive broadcast elements.

Stonshield Conductive Sealer- Epoxy Option
1.25 carton of CE4 containing:
(6) foil bags of Amine
(6) foil bags of Resin
0.67 cartons of conductive fibers
1 carton of conductive fibers contains 12 glass jars

Stonshield Conductive Sealer – Urethane Option
2 cartons of CA7 containing:
(4) foil bags of Isocyanate
(4) foil bags of Amine
0.67 cartons of conductive fibers
1 carton of conductive fibers contains 12 glass jars

COVERAGE
Each unit of Stonshield ESD will cover approximately 27.9 m^2 of surface at a 2 mm nominal thickness.

STORAGE CONDITIONS
Store all components of Stonshield ESD between 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.

COLOUR
Stonshield ESD is available in 15 standard colours. Refer to the Stonshield Colour Sheet.

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 (ESD-S7.1)	<1.0x10^6 ohms(Ω)
Body Voltage Generation. (ESD STM97.2)	<100 volts*

*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

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:
- 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 Spray caster. Allow 8 hours to cure and vacuum or sweep off excess aggregate.
- 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.
- The Stonshield Aggregate is mixed with the conductive elements and is then broadcast into the wet Undercoat using the special Stonhard Spray caster. Allow 8 hours to cure, then sweep off the excess aggregate. Do not vacuum.
- 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 nap roller perpendicular to the initial roll. Allow 8 hours to cure. If the urethane option is chosen, allow 3 hours to cure.
- 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 1.0x10^6 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 1.0x10^6 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 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 online at www.stonhard.com under Products\Resource Docs 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.

CE MARKING

The harmonized European Standard EN 13813 “Screed material and floor screeds - Screed materials - Properties and requirements” specifies the requirements for screed materials for use in floor construction internally. Resinous flooring systems as well as resinous screeds fall under this specification, they have to be CE-labelled as per Annex ZA., Table ZA.1.5 and 3.3 and fulfil the requirements of the given mandate of the Construction Products Regulation no. 305/2011

CE

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DOP-2013.05-005

EN 13813 SR-AR1.0-B2.0-IR18

Synthetic resin flooring system for use internally in buildings
(system as per Product Data Sheet)

Release of corrosive substances:	SR
Wear resistance:	AR 1.0
Adhesion strength by pull off test:	> B2.0
Impact resistance:	IR18
Chemical resistance	CRG*

* CRG: see Stonhard Chemical Resistance Guide

STONHARD EST. 1922

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