

# Installation Instructions

## Vinyl Flooring, Type VS and Type VE

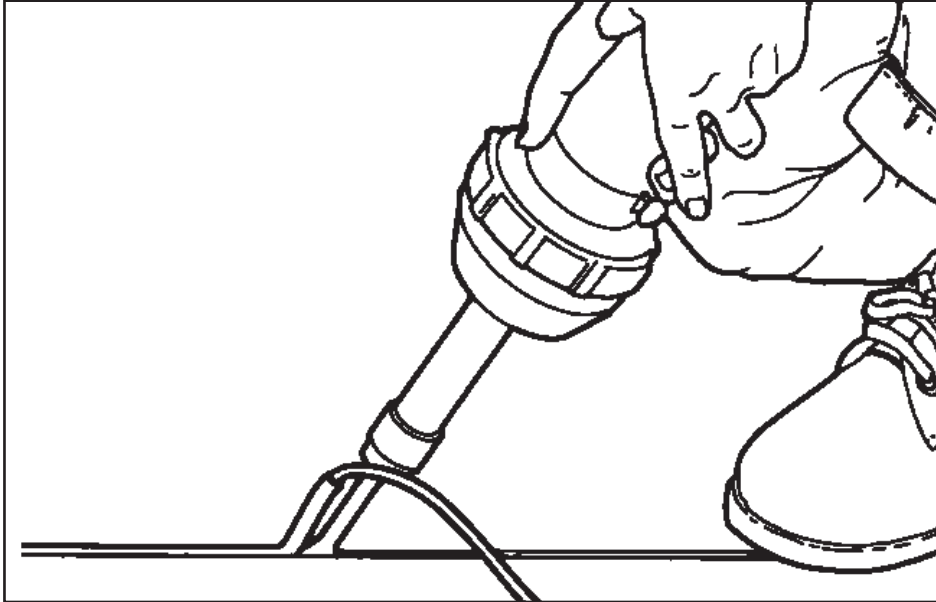


Figure 1. Installation of Vinyl Flooring

### Description

Type VS and Type VE vinyl flooring are ideal for whole room applications where an ESD safe floor surface is required. The flooring is constructed in three layers - a dissipative outer layer, a conductive middle layer and a polyester/rayon scrim. The vinyl material is antistatic because it provides less than 15 volts of static generation. It is easy to install and can be heat and chemically welded for watertight, clean room environments. This multi-layer material is free of mercury and offers superior resistance to stains and chemicals.

Type VE meets Americans with Disabilities Act (ADA) for slip resistance with its embossed texture. The smooth finish of Type VS offers an attractive surface for all floors.

### Installation Overview

- May be installed on, below, or above grade on any sound, tight and dry subfloor including old flooring materials.
- Use only Portland cement based patching or leveling compounds.
- Do not install over gypsum based patches or leveling compounds.
- Moisture emission not to exceed 3.0 lbs. per 1000 sq. ft. in 24 hrs. as tested with a calcium chloride test kit.
- For permanent installation use #500 Latex Adhesive (ESD Systems Item #11990). For electrical seam connection use #1000 Conductive Epoxy (ESD Systems Item #11992) and apply 12" strip of conductive epoxy centered under the length of the seam.
- Use trowel with notches 1/16" x 1/16" x 3/32" spacing (adhesive spread rate approx. 110 sq. ft. per gal.)
- Allow adhesive to become slightly tacky

- Lay material into adhesive and roll in both directions with a 3 section linoleum roller
- Do not reverse sheets
- Do not install over cut-back adhesive
- Install cuts and rolls in consecutive order
- Seams may be heat or chemically welded
- Use seam welding liquid when chemically welding seams
- Under chemically or heat welded seams, lay approximately a 3 inch piece of grounding ribbon into adhesive across the seam area before laying the floor (24 hours must be allowed after installation before heat welding)
- Lay 3 ft. piece of grounding ribbon (into wet adhesive) 1 foot under vinyl flooring and 2 ft. loose, for ground connection for each 5,000 sq. ft. of contiguous floor, or each room if not connected
- Clean with Statproof® Floor Stripper and cover with 2 coats of Statproof® Floor Finish after installation (allow 24 hours for adhesive to cure)

### Patching, Leveling and Smoothing

All substrates must be made smooth and level. All holes must be filled and irregularities eliminated, otherwise they will "telegraph" through the sheeting. The best way to provide an acceptable surface is to use an approved latex and dry powder underlayment mix. Be sure to sand the cured underlayment by using a power sander and a medium grade sandpaper to remove any trowel marks. Remove all dust created by sanding.

ESD Systems Type VS and VE Flooring may be installed satisfactorily over composition vinyl tile and other types of resilient flooring. If installation is to be made over composition vinyl tile, make sure all tile are well bonded to the substrate. If occasional loose tiles are found they must be removed and replaced with new ones using a suitable tile adhesive. The entire area must then be stripped of all old wax and other foreign matter. The entire surface must then be made smooth and level using an approved latex underlayment.

**NOTE:** If most of the tiles are found to be loose, cracked or curled, it is best to remove all tile. This is accomplished by hand scraping or by using a power stripper. Remove all old tile adhesive by scraping and/or abrading.

If the installation is to be made over old resilient sheet flooring, the surface must first be stripped to remove all accumulated wax and dirt. The old floor covering must be firmly cemented to the floor. If not, it should be removed altogether. Smooth the surface using an approved latex and dry powder underlayment mix.

Old ceramic tile must be cleaned and stripped of any old wax and made smooth and level by using an approved latex underlayment mix.

A satisfactory vinyl flooring installation may be made over a sound plywood substrate previously covered with a troweled on or sprayed on resinous type floor covering if these instructions are followed: Remove as much of the old resinous surfacing material as possible by scraping and power sanding with coarse sandpaper to provide a smooth surface. If leveling, patching and smoothing is necessary, use an approved latex type underlayment.

### PAINTED CONCRETE SLABS

All old paint must be removed by sanding mechanically, using No. 5 open grit sandpaper. Sand floors of this type lightly to remove wax and to roughen surface to provide a positive bond.

Repair all blemishes with an approved latex underlayment mix.

**IMPORTANT:** All substrates that the flooring is to be applied must be clean, level, smooth, dust free and dry at the time of installation. Cracks, grooves, and other imperfections should be filled and leveled with a good quality latex underlayment. The new finished flooring will fail if the sub-floor or underlayment fails. Thus, care must be taken to analyze the condition of the surface involved prior to the installation of the new flooring material.

The major problem with a concrete type of sub-floor is moisture - in both old and new concrete. All concrete slabs should be tested for moisture with either calcium chloride crystals or an industry approved moisture meter prior to installation of the flooring material. A suitable moisture barrier is the best insurance against moisture problems. ***Moisture emission must not exceed 3 pounds per 1000 square feet per 24 hours.***

### Conditioning of Materials

The sequence of site preparation and the storage and conditioning of all materials to be used is vital for a successful installation of rolled floor goods.

1. Immediately upon receipt, it is vital to stand roll goods on end. ***All rolls of material must always be stored standing on end.***

2. Heating and/or air conditioning must be operative for a minimum of one week prior to installation and a temperature of not less than 70°F nor more than 90°F should be maintained.

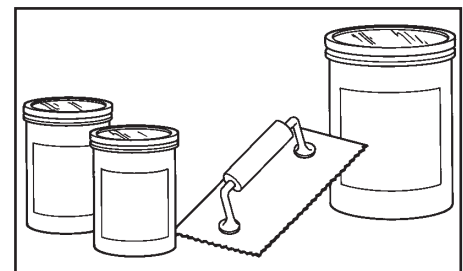
3. Both the flooring material and the necessary adhesives should be stored on the installation site for at least 48 hours prior to attempting an installation.

4. It is extremely important to unroll the sheet material totally and allow it to “relax” before cutting and fitting. This relaxation period should be at least 12 hours for all rolled goods materials. Cutting and fitting should take place *only* after this “relaxation” activity.

5. Remember to allow for some material loss due to the double cutting for seam fitting and/or any flash coating you have decided to use.

### Installation Instructions

1. For permanent installation use #500 Latex Adhesive (ESD Systems Item #11990). The coverage of this adhesive is 500 sq. ft. per five gallon pail. For electrical seam connection use #1000 Conductive Epoxy (ESD Systems Item #11992). The coverage of the conductive epoxy is 110 sq. ft. per gallon.



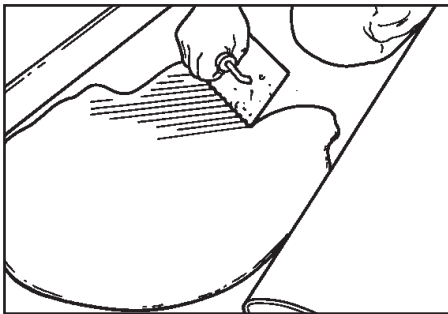
**Figure 2. Installation materials.**

2. Use trowel with notches 1/16" x 1/16" x 3/32" spacing (adhesive spread rate approx. 110 sq. ft. per gal.)

3. Unroll ESD Systems Type VS or VE sheeting and allow it to “stretch” before cutting and fitting. (a) Before the material is cut, remember to allow for some loss because all seams are to be “double cut”, as described later. This means at least one inch will be lost where the edges overlap before cutting at each seam. (b) Also allow for “field” loss if the sheeting is to be coved up the wall. (c) Take care in fitting to make sure there is a minimum of waste.

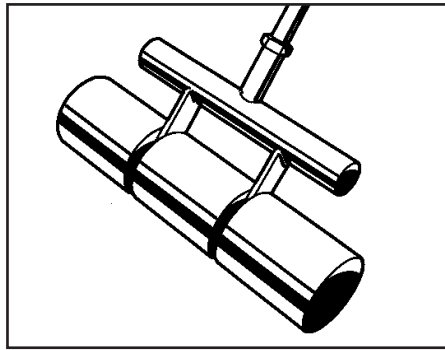
4. If complicated fitting is required, it is sometimes advisable to make a pattern from 15 lb. saturated felt in order to achieve a neat, well-fitting installation.

5. Lay out the work so that the first sheet to be installed will lay flush against a wall. If the installation is to be coved, the sheeting would be butted against the wall at the 90° angle after breaking the backing cloth. (See instructions under coving.) Cut the remaining sheets and place them in position. When making cuts, bear in mind that all sheets are to be “double cut”, regardless of whether the seams are to be welded or not. Be sure to lap one sheet over the other at least one inch when laying out the work.



**Figure 3. Fold sheet back, away from wall to spread Item #11990 adhesive with notched trowel.**

6. Turn half the width of the first sheet over itself (away from the wall), exposing the deck or floor beneath. Spread adhesive over the exposed floor surface and allow to set for the time recommended on the adhesive

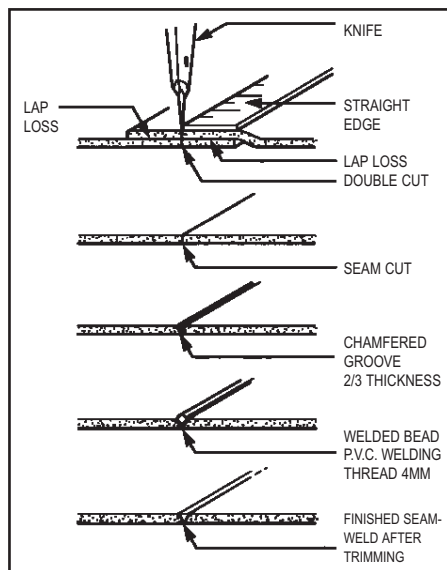


**Figure 4. Roll finished sheet to force any air bubbles out.**

package. Now “flop” the turned-back half sheet into the spread adhesive and roll thoroughly with a three-section linoleum roller. Roll to the side of the sheet to force out trapped air and to prevent blistering.

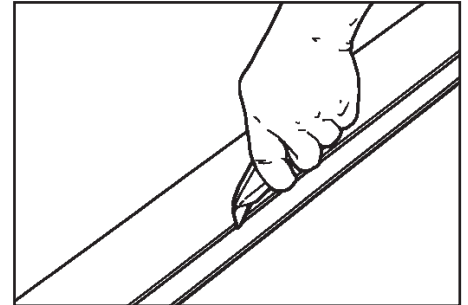
7. Turn back the other half of the same sheet (toward the wall) and spread the adhesive over the entire exposed area, *except for a six-inch strip along the entire length of the seam.* After a suitable wait, place the sheet into the adhesive and repeat the process of rolling.

8. You have now completed the installation of one sheet. Continue until you have laid Type VE or VS sheeting over the entire area. Be sure you do not spread adhesive within



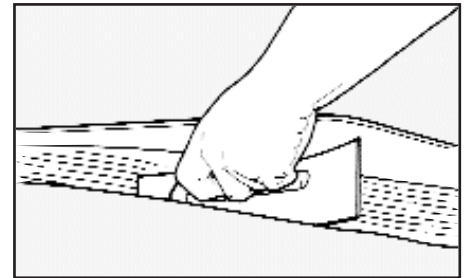
**Figure 5. How to double cut .**

approximately six inches of both sides of each seam. (If the sheet was stuck to the floor or if the adhesive was wet, you would have a great deal of trouble making the double cut.)



**Figure 6. Double cut all seams, cutting through both layers of overlapped sheet for a neat, flush joint.**

9. In making double cuts, always use a heavy steel straight edge at least six feet long. Snap a chalk line down the center of the seam and lay the edge of the straight edge over the chalk line. Use the straight edge as a guide and cut completely through both sheets with a sharp linoleum knife. While making the cut, hold the knife as nearly vertical as possible.

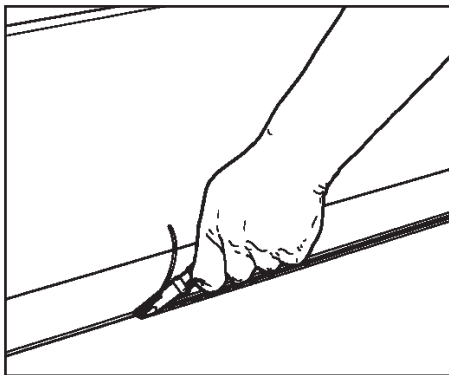


**Figure 7. Spread Item #11992 adhesive under seam area after double cutting.**

10. After removing the two narrow “slivers” of sheeting created by the double cutting, lift the two six-inch uncemented seam edges high enough to apply the conductive adhesive to the deck. Allow it to set, then lower the edges and carefully fit the two sheets together. Handroll the seam with a silicone roller. Should any adhesive “squeeze” out on to the surface it should be removed immediately with a moist cloth.

## Heat Welding

If a seamless installation is required, the next step is to prepare the seam to receive the heat-welding thread. This type of installation is ideal for clean room applications.

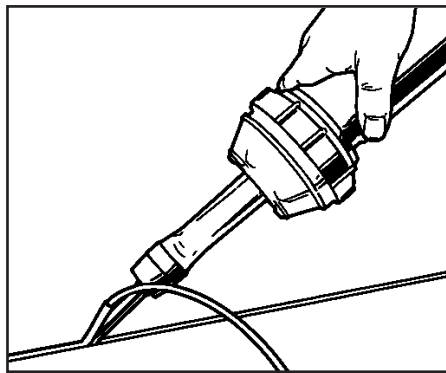


**Figure 8. Cut a “V” groove the entire length of seam prior to heat welding.**

1. Cut a “V” groove two-thirds of the way through the seam with an adjustable hand grooving tool guided by a straight edge. First, practice using the tool and adjusting it for proper depth by cutting grooves in a piece of scrap sheeting. If the sheeting is cold and grooving is difficult, try heating the sheeting slightly. Do this by setting the dial at the rear of the heat gun in the No. 3 position and fan the area lightly with the gun.

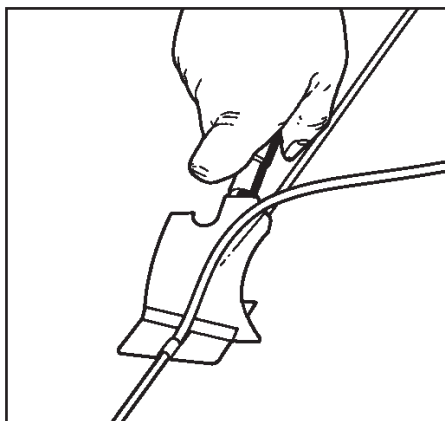
2. Warm-up the heat gun for a few minutes with the dial set at No. 3 or No. 4. You can tell when the temperature is right for welding by holding the nozzle about an inch from the scrap sheeting. When slight blistering occurs, the temperature is correct.

3. When ready to weld, feed matching color 4mm PVC welding thread into the top hole of the speed welding nozzle. Push the thread completely through the tube so that it extends approximately two inches beyond the bottom of the tube. Insert the thread quickly and keep it moving slowly through the tube so it will not melt and clog the nozzle.



**Figure 9. Welding with a heat gun requires a smooth, steady movement along the “V” groove. Practice first on a piece of scrap material.**

4. Place the heated thread and nozzle tip in the “V” groove and, by applying pressure, move the gun along the seam at a speed of about six feet per minute. It is important that firm and constant pressure be maintained and that the gun be moved at a constant speed. Correct nozzle temperature and proper speed are necessary to assure proper melting of the thread and complete fusing together of the sheets.



**Figure 10. Trim off top of welding thread flush to floor with a sharp spatula and a trim plate to keep it from gouging.**

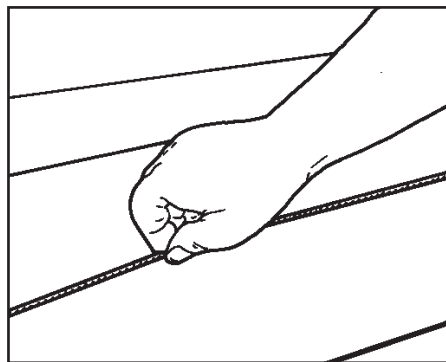
5. Check the weld occasionally to make sure that the thread is well-fused to the sides of the groove.

6. After the thread has cooled, use a spatula and trim plate to shave the thread flush with the sheeting. Keep the spatula sharp with a fine oil stone

and sharpen only one side so it will act like a wood plane. To help prevent gouging of the sheeting, always use the trim plate.

## Welding Thread

PVC Welding Thread is available in all Type VS and VE colors, and possesses the same fire-retardant qualities as the sheeting. It does not affect the electrical insulating properties of a seamless installation.

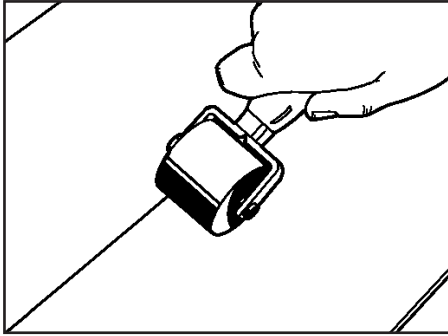


**Figure 11. Snapping a chalk line along backing where sheet will be turned up to form coving.**

## Coving

1. Install a suitable stainless steel or aluminum cap strip firmly to the wall at the top of the turned up sheeting and insert the flooring material into the notch of the cap strip in the lip of the cap strip. Apply the cap strip to the wall at your desired height of the cove.

2. In making cove installations, strike a chalk line along the cloth backing side of the Type VS or VE sheeting where it is to be turned up the wall. For instance, strike the line six inches from the edge of the sheet if the coved (vertical) height is to be six inches. Bend the sheeting 180° along the chalk line making sure that the backing cloth is completely broken. This can best be accomplished doubling over the sheet and then rolling with a cove base roller. Do not cement the turned up portion of the sheeting to the wall until after the



**Figure 12. Breaking the backing cloth along the chalk line where coving will turn up wall.**

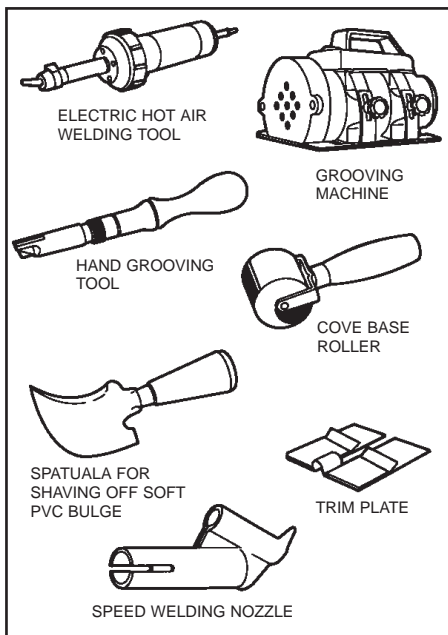
sheeting has been cemented to the floor. Then spread the adhesive on the wall and let set until it becomes tacky. *Only now press the flooring into the adhesive and complete the covered section by rolling this area with your cove base roller.*

## Heat Welding Tools

The tools shown on this page are necessary for proper heat welding of Type VS or VE flooring.

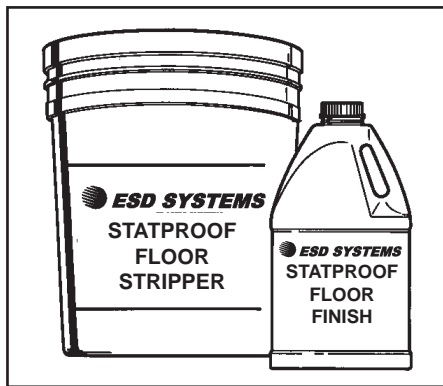
## General Information

To avoid uneven surface appearance, traffic should not be allowed on the deck until the adhesive has thoroughly set. After the adhesive has dried and



**Figure 13. Heat welding tools.**

before opening the installation to traffic, the floor should be thoroughly cleaned. Check carefully for adhesive stains and other foreign matter. Remove stains carefully and sweep floor using a soft hair push broom. Clean with Statproof® Floor Stripper and cover with two to three coats of Statproof® Floor Finish. All PVC vinyl flooring products and adhesives should be stored at a minimum temperature of 70°F for at least 72 hours before installation. Protect the adhesives from freezing.



**Figure 14. Statproof® Floor Stripper and Statproof® Floor Finish**

Where it is not practical to cove the Vinyl Flooring, scribe the material to within 1/8" of the wall after the floor is installed on the horizontal surface. Now apply your top-set base to the wall covering the area between the flooring and the wall.

ESD Systems Type VS and VE must be fitted neatly and made watertight with either a caulking or the Series 1000C Conductive Epoxy around drains, outlets, walls, bulkheads, stanchions and other deck protrusions.

**IMPORTANT!** When installing any sheet vinyl flooring always wear soft soled shoes with non-scuffing soles and heels. If not available, work in your stockings feet.

Be sure to keep knives sharp and all installation tools clean at all times. Always use trowels with proper depth notches.

## Specifications

**Thickness:** 0.080" (2.0mm)  
**Color\*:** Black, white, grey  
**Hardness:** 80 ± 10 Shore "A" per ASTM D2240-75  
**Tensile Strength:** 942 PSI per ASTM D2370-75  
**Elongation:** 300% per ASTM D2370-15

## ELECTRICAL PROPERTIES

**Dissipative Outer Surface:**  
**RTG:** 5.0 x 10<sup>6</sup> - 8.0 x 10<sup>7</sup> Ohms per ANSI EOS/ESD-7.1

**Conductive Middle Layer:**  
**RTG:** <10<sup>5</sup> Ohms

\*Other colors available with six week lead time

## Limited Warranty

ESD Systems expressly warrants that for a period of one (1) year from the date of purchase, ESD Systems Vinyl Flooring will be free of defects in material. Within the warranty period, the material will be replaced, free of charge. Any material under warranty should be shipped prepaid to the ESD Systems factory in Marlboro, MA. Include a copy of your original packing slip, invoice, or other proof of date of purchase. Call customer service at 508-485-7390 before shipping for a return authorization number. Warranty replacements will take approximately one week.

## Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

## Limit of Liability

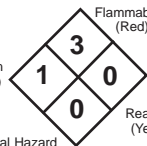
In no event will ESD Systems or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.

**Material Safety Data Sheet**

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200. Standard must be consulted for specific requirements.

**NFPA Designation 704**

Degree of Hazard:  
4 = Extreme  
3 = High  
2 = Moderate  
1 = Slight  
0 = Insignificant

Health  
(Blue)

Special Hazard

IDENTITY (As Used on Label and List)

CONDUCTIVE EPOXY PART A

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

**Section I**

Manufacturer's Name ESD Systems	Emergency Telephone Number
Address (Number, Street, City State and Zip Code) 261 Cedar Hill St., Marlboro, MA 01752-3004	Telephone Number for Information (508) 485-7390
	Date Prepared 01-01-97
	Signature of Preparer (optional)

**Section II - Hazardous Ingredients/Identity Information**

Hazardous Components (Specific Chemical Identity, Common Name[s])	OSHA PEL	ACGIH TLV	LD50/LC50	% WT
Epichlorohydrin Bisphenol A Resin CAS #25036-25-3 Carcinogen: No SARA Title III, Sect. 313 Reportable: No	NE STEL: NE	NE --	ND --	50-60
Ethylene Glycol Monopropyl Ether CAS #2807-30-9 Carcinogen: No SARA Title III, Sect. 313 Reportable: Yes	NE STEL: NE	NE --	3089 mg/kg (Oral-Rat)	15-20
Ethyl Alcohol (Denatured) CAS #64-17-5 Carcinogen: No SARA Title III, Sect. 313 Reportable: No	NE STEL-NE	NE --	NDD --	10-15

**Section III - Physical/Chemical Characteristics**

Boiling Point	172°F	Specific Gravity/Density (g/ml)	1.1
% Volatile by Volume	35	Melting Point	N/A
Vapor Density (AIR = 1)	>1	Evaporation Rate (Butyl Acetate = 1)	>1
Solubility in Water	None		
Appearance and Odor	Black medium paste with an alcohol odor		

**Section IV - Fire and Explosion Hazard Data**

Flash Point (Method Used) 95°F (SETA C.C.)	Flammable Limits	LEL 3.84	UEL 28.7
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Extinguishing Media

Carbon Dioxide, dry chemical or foam

Special Fire Fighting Procedures

Water spray may be ineffective. Water may be used to cool closed containers to prevent pressure build up and possible auto-ignition or explosion when exposed to extreme heat. Fog nozzles are preferred if water is used.

Unusual Fire and Explosion Hazards

Keep containers closed except when in use. Closed containers may explode when exposed to extreme heat. Do not use in vicinity of open flame or sparks. Extinguish all pilot lights and all sources of ignition.

**Section V - Reactivity Data**

Stability	Unstable		Conditions to Avoid	Heat and open flame.
	Stable	X		
Incompatibility (Materials to Avoid) <b>Oxidizing materials.</b>				
Hazardous Decomposition or byproducts May produce carbon dioxide and carbon monoxide, organic compounds of unknown structure.				
Hazardous Polymerization	May occur		Conditions to Avoid	Unknown
	Will Not Occur	X		

**Section VI - Health Hazard Data**

Route(s) of Entry:	Inhalation?	YES	Skin?	YES	Ingestion?	NO
Health Hazards (Acute and Chronic): See signs and symptoms of exposure.						
Carcinogenicity:	NTP?	N/A	IARC Monographs?	N/A	OSHA Regulated?	N/A

Signs and Symptoms of Exposure:

ACUTE: Inhalation of high vapor concentrations may cause dizziness, headache, unconsciousness, irritation of the respiratory tract. CHRONIC: Prolonged or repeated skin contact may be irritating.

Medical Conditions

Generally Aggravated by Exposure: None Known

Emergency and First Aid Procedures:

EYES: Flush with water for at least 15 min. Take to a physician for definitive medical treatment.  
SKIN: Wash affected area with soap and water. INHALATION: If overcome by vapors, remove from exposure, restore breathing. Keep individual calm & call a physician. INGESTION: Treat symptomatically and contact physician.

**Section VII - Precautions for Safe Handling and Use**

Steps to Be Taken in Case Material is Released or Spilled

Scrape into containers for disposal.

Waste Disposal Method:

Dispose in accordance with local, state and federal regulations.

Precautions to be Taken in Handling and Storing:

Do not store above 120°F. Vapors may ignite explosively. Prevent build up of vapors. Keep away from heat, sparks, and open flame. Avoid prolonged breathing of vapors and repeated contact with skin.

Other Precautions:

Keep out of reach of children.

**Section VII - Control Measures**

Respiratory Protection (Specify Type)

None required with adequate ventilation.

Ventilation	Local Exhaust	Special
	Mechanical (General)	Other
In confined space		

Protective Gloves:

Usually none required.

Eye Protection:

Normal precautions.

Other Protective Clothing or Equipment:

None.

Work/Hygenic Practices:

Good general cleanliness and hygiene.

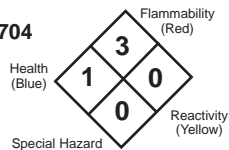
N/A = Not Applicable; N/E = None Established

## Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

### NFPA Designation 704

Degree of Hazard:  
4 = Extreme  
3 = High  
2 = Moderate  
1 = Slight  
0 = Insignificant



IDENTITY (As Used on Label and List)

CONDUCTIVE EPOXY PART B

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

### Section I

Manufacturer's Name

Emergency Telephone Number

ESD Systems

Address (Number, Street, City State and Zip Code)

261 Cedar Hill St., Marlboro, MA 01752-3004

Telephone Number for Information

(508) 485-7390

Date Prepared

01-01-97

Signature of Preparer (optional)

### Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	LD50/LC50	% WT
Polymer Fatty Acids with Additives CAS #68082-29-1 Carcinogen: No SARA Title III, Sect. 313 Reportable: No	NE STEL: NE	NE --	>5000 mg/kg (Oral-Rat)	60-70
Methyl Alcohol CAS #67-56-1 Carcinogen: No SARA Title III, Sect. 313 Reportable: Yes	200 PPM STEL: 250 PPM	200 PPM	NDD	10-15
Ethyl Alcohol (Denatured) CAS #64-17-5 Carcinogen: No SARA Title III, Sect. 313 Reportable: No	NE	NE	NDD	5-10

### Section III - Physical/Chemical Characteristics

Boiling Point	148°F	Specific Gravity/Density (g/ml)	1.0
% Volatile by Volume	36	Melting Point	N/A
Vapor Density (AIR = 1)	>1	Evaporation Rate (Butyl Acetate = 1)	>1
Solubility in Water	None		
Appearance and Odor	Black medium paste with an amine odor		

### Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	73°F (SETA C.C.)	Flammable Limits	LEL	UEL
			6	36

Extinguishing Media

Carbon Dioxide, dry chemical or foam

Special Fire Fighting Procedures

Water spray may be ineffective. Water may be used to cool closed containers to prevent pressure build up and possible auto-ignition or explosion when exposed to extreme heat. Fog nozzles are preferred if water is used.

Unusual Fire and Explosion Hazards

Keep containers closed except when in use. Closed containers may explode when exposed to extreme heat. Do not use in vicinity of open flame or sparks. Extinguish all pilot lights and all sources of ignition.

Conductive Epoxy Part B Page 2

### Section V - Reactivity Data

Stability	Unstable	Conditions to Avoid	Heat and open flame.
	Stable	X	

Incompatibility (Materials to Avoid)

Oxidizing materials.

Hazardous Decomposition or byproducts

May produce carbon dioxide and carbon monoxide, organic compounds of unknown structure.

Hazardous Polymerization	May occur	Conditions to Avoid	Unknown
	Will Not Occur	X	

### Section VI - Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	NO
Health Hazards (Acute and Chronic):	See signs and symptoms of exposure.		
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	N/A	N/A	N/A

Signs and Symptoms of Exposure:

ACUTE: Inhalation of high vapor concentrations may cause dizziness, headache, unconsciousness, irritation of the respiratory tract. CHRONIC: Prolonged or repeated skin contact may be irritating.

Medical Conditions

Generally Aggravated by Exposure: None Known

Emergency and First Aid Procedures:

EYES: Flush with water for at least 15 min. Take to a physician for definitive medical treatment. SKIN: Wash affected area with soap and water. INHALATION: If overcome by vapors, remove from exposure, restore breathing. Keep individual calm & call a physician. INGESTION: Treat symptomatically and contact physician.

### Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Scrape into containers for disposal.

Waste Disposal Method:

Dispose in accordance with local, state and federal regulations.

Precautions to be Taken in Handling and Storing:

Do not store above 120°F. Vapors may ignite explosively. Prevent build up of vapors. Keep away from heat, sparks, and open flame. Avoid prolonged breathing of vapors and repeated contact with skin.

Other Precautions:

Keep out of reach of children.

### Section VIII - Control Measures

Respiratory Protection (Specify Type)

None required with adequate ventilation.

Ventilation	Local Exhaust	Special
	Mechanical (General)	Other
	In confined space	

Protective Gloves:

Usually none required.

Eye Protection:

Normal precautions.

Other Protective Clothing or Equipment:

None.

Work/Hygenic Practices:

Good general cleanliness and hygiene.

N/A = Not Applicable; N/E = None Established

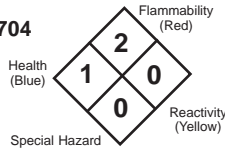


261 CEDAR HILL ST. • MARLBORO, MA 01752-3004 • PHONE (508) 480-0257 • FAX (508) 485-7390

**Material Safety Data Sheet**  
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910. 1200. Standard must be consulted for specific requirements.

**NFPA Designation 704**

Degree of Hazard:  
4 = Extreme  
3 = High  
2 = Moderate  
1 = Slight  
0 = Insignificant



IDENTITY (As Used on Label and List) ADHESIVE No. 500	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
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**Section I**

Manufacturer's Name ESD Systems	Emergency Telephone Number
Address (Number, Street, City State and Zip Code) 261 Cedar Hill St., Marlboro, MA 01752-3004	Telephone Number for Information (508) 485-7390
	Date Prepared 01-01-97
	Signature of Preparer (optional)

**Section II - Hazardous Ingredients/Identity Information**

Hazardous Components (Specific Chemical Identity, Common Name(s))	PERCENT	OCCUP. EXPOS. LMT.		VAP. PRESS.
		TLV	PEL	
Petroleum Distillate CAS #64742-47-8	3%	N.E.	400ppm	1mm @ 118°F
Toluene CAS #108-88-3	5%	100ppm	100ppm	37mm @ 66°F
Methanol CAS #67-56-1	4%	200ppm	100ppm	100mm @ 70°F
Ethylene Glycol CAS #107-21-1	1%	100ppm	100ppm	0.05mm @ 68°F
Ethylene Glycol Monoethyl Ether CAS #110-80-5	1%	200ppm	100ppm	4mm @ 68°F

**Section III - Physical/Chemical Characteristics**

Boiling Point 200-240°F	% Water Volume 25-30%
% Volatile by Volume 40-45%	Wt/Gal 8 lbs
Vapor Density (AIR = 1) Heavier than air	Evaporation Rate (Butyl Acetate = 1) Slower than Ether
Solubility in Water Dispersible	
Appearance and Odor Off-white paste	

**Section IV - Fire and Explosion Hazard Data**

Flash Point (Method Used) 120°F	Flammable Limits	LEL N/A	UEL N/A
Extinguishing Media Carbon Dioxide, dry chemical, water fog or foam			
Special Fire Fighting Procedures N/A			
Unusual Fire and Explosion Hazards Vapors may ignite if allowed to collect and concentrate. Closed containers may develop excessive pressure and erupt when exposed to extreme heat.			

**Section V - Reactivity Data**

Stability	Unstable	Conditions to Avoid	Heat, sparks, open flame, all other sources of ignition.
	Stable	X	

Incompatibility (Materials to Avoid)  
**Oxidizing materials.**  
Hazardous Decomposition or byproducts  
None known.

Hazardous Polymerization	May occur	Conditions to Avoid	Unknown
	Will Not Occur	X	

**Section VI - Health Hazard Data**

Route(s) of Entry:	Inhalation? YES	Skin? YES	Ingestion? YES
Health Hazards (Acute and Chronic):			
Carcinogenicity:	NTP? N/A	IARC Monographs? N/A	OSHA Regulated? N/A

Signs and Symptoms of Exposure:  
Inhalation of high concentrations may cause nausea, lightheadedness, drowsiness, eye irritation and intoxication. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. No long term laboratory tests to determine chronic effects. skin irritation and dermatitis may develop from prolonged contact with skin.

Medical Conditions Generally Aggravated by Exposure: Current anemia, respiratory tract or liver ailments, and skin conditions.

Emergency and First Aid Procedures:  
Move person to fresh air and apply artificial respiration if needed. Call physician immediately. In case of eye contact, flush eyes with plenty of water for fifteen (15) minutes. Wash skin thoroughly with soap and water or hand cleaner.

**Section VII - Precautions for Safe Handling and Use**

Steps to Be Taken in Case Material is Released or Spilled  
Remove or extinguish all sources of ignition in the area, including equipment which may spark. Scoop material into approved DOT container. Remove to safe place where material can dry.  
Waste Disposal Method:  
Dispose in accordance with local, state and federal regulations. Do not flush adhesive down drain.  
Precautions to be Taken in Handling and Storing: See signs and symptoms of exposure.  
Other Precautions:

**Section VII - Control Measures**

Respiratory Protection (Specify Type)  
Proper ventilation normally sufficient. If eye watering, headaches or dizziness are experienced, increase fresh air supply, wear NIOSH approved respiratory equipment, or leave the area.  
Ventilation  
Combustible vapors may ignite. Adequate ventilation is essential to prevent buildup of vapors to combustible concentration. Open all windows and doors and utilize other fire-safe means to assure fresh air entry and exhaust during use and until all vapors are gone. A slight solvent and ammonia odor may be noted until adhesive dries.  
Protective Gloves:  
To prevent skin contact.  
Eye Protection:  
Glasses to avoid splashes.  
Other Protective Clothing or Equipment:  
None.  
Work/Hygenic Practices:  
Wash skin thoroughly with soap and water or hand cleaner.