



**DUR-A-FLEX**  
INNOVATION FROM THE FLOOR UP

## ARMOR STAT ESD

### SUBMITTAL PACKAGE CONTENTS:

- DUR-A-GLAZE 4 ESD PRIMER-PRODUCT DATA SHEET
- DUR-A-GLAZE 4 ESD PRIMER HARDENER – MSDS
- DUR-A-GLAZE 4 ESD PRIMER RESIN – MSDS
- DUR-A-GARD ESD – PRODUCT DATA SHEET
- DUR-A-GARD ESD – APPLICATION INSTRUCTIONS
- DUR-A-GARD ESD RESIN-MSDS
- DUR-A-GARD ESD HARDENER- MSDS
- ARMOR STAT ESD – PRODUCT DATA SHEET
- ARMOR STAT ESD – APPLICATION INSTRUCTIONS
- ARMOR STAT ESD SYSTEM – MSDS
- SURFACE PREPARATION GUIDELINES
- FLOOR EVALUATION GUIDELINES
- FLOOR EVALUATION FLOW CHART
- CHEMICAL RESISTANCE CHART
- CLEANING GUIDELINES
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## **DUR-A-GLAZE #4 ESD PRIMER**

### **DESCRIPTION**

DUR-A-GLAZE #4 ESD PRIMER is a 2-component, 100% solids Static Dissipative Primer. This coating was designed as a concrete primer for DUR-A-GARD ESD. It provides a static dissipative reading of  $10^6$ - $10^9$   $\Omega$ /Square. DUR-A-GLAZE #4 ESD PRIMER provides an average of 14v Body Voltage Generation when utilizing dissipative footwear. Resistance readings are consistent for the life of the floor and are independent of ambient humidity.

### **BENEFITS**

- Static Dissipative
- Excellent Adhesion
- 14v Avg. BVG
- Dissipates 5000
- Easy To Use 1:2 Mix Ratio
- Volt charge to Zero in 0.01 seconds

### **COLORS**

DUR-A-GLAZE #4 ESD PRIMER is available in Black only.

### **TYPICAL USES**

DUR-A-GLAZE #4 ESD PRIMER is to be used as a primer for DUR-A-GARD ESD and is therefore not recommended as a stand alone system.

### **SURFACE PREPARATION**

This product requires preparation in order to perform as expected. Substrate must be profiled, clean, sound, and dry. Please refer to the DUR-A-FLEX Surface Preparation Guidelines on our website for more information.

### **APPLICATION METHOD / SPREAD RATES**

DUR-A-GLAZE #4 ESD PRIMER is typically applied with a squeegee and back rolled at 200 SF/gal. Please refer to the DUR-A-GLAZE #4 ESD PRIMER / DUR-A-GARD ESD Application Instructions for more information.

### **LIMITATIONS**

This product is best suited for application in temperatures between 60°F and 85°F. Top-coating with non-conductive waxes or finishes will render the static dissipative properties ineffective. This product is not intended for use in munitions or explosive manufacturing facilities.

### **PACKAGING**

DUR-A-GLAZE ESD is packaged in 1-gallon cans or 5-gallon pails. Shelf life is 6 months in unopened containers. DUR-A-GLAZE #4 ESD PRIMER Resin is mixed with DUR-A-GLAZE #4 ESD PRIMER hardener.

### **GUIDE SPECIFICATIONS**

This product is part of the DUR-A-FLEX family of polymer systems. Please refer to the master Specifier's Guide for complete three part guide specs.

### **JOINT GUIDELINES**

Refer to the Joint Guidelines for complete details on our website.

## TECHNICAL INFORMATION

Color	Black	
Mixed Viscosity at 70° F	1,700 cps	
Pot life at 70° F	20 – 25 Minutes	
Cure Time, Touch Dry at 70° F	8 – 10 Hours	
Cured Film Thickness	8 Mils	
Toxicity	Non – Toxic, USDA Approved	
Physical Property	Test Method	Result
Surface Resistivity	ASTM D-257	10 <sup>6</sup> -10 <sup>9</sup> Ω/Square
Static Decay	Mil-Std-3010, Method 4046	0.01 Seconds
Voltage Generation (with dissipative footwear)	ESD STM 97.2	14v
Compressive Strength	ASTM D-695 ASTM C-579	16,000 psi 10,500 psi
Tensile Strength	ASTM D-638 ASTM C-307	3,000 psi 1,950 psi
Tensile Elongation	ASTM D-638	7.50%
Flexural Strength	ASTM D-790 ASTM C-580	4,000 psi 2,900 psi
Hardness (Shore D)	ASTM D-2240	70-80
Linear Shrinkage	ASTM D-2566	0.02%
Linear Expansion	ASTM D-696	2 × 10 <sup>-5</sup>
Bond Strength to Concrete	ASTM D-4541	400 psi substrate fails
Indentation	MIL D-3134	.025 MAX
Impact Resistance	MIL D-3134	Pass
Water Absorption	ASTM D-570	0.04%
Heat Resistance Limitation		140°F – 200°F
Flammability	ASTM D-570	Self Extinguishing
Flame Spread/NFPA 101	ASTM E-84	Class A
Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles	ASTM C-501	75 mg loss
Coefficient of Friction	ASTM D-2047	0.7
VOC Content		7.45 g/l

### DRAWINGS AND DETAILS

Standard CAD drawings and details are available for coves, drains, breaches, transitions, etc. Please refer to the master Drawings and Details guide for actual drawings.

### MOISTURE CONCERNS

Please refer to the Floor Evaluation Flow Chart in the Contractor's Center of our website for a step-by-step process to determine the condition of the concrete.

### CAUTION

**Slight batch-to-batch color variations may occur. When ordering to match a previous color, inquire if the same batch number or quality control number is still available.** Follow the Hazardous Materials Identification System labeling guide for proper personal protective equipment to use when handling this product. Use only as directed. **KEEP OUT OF REACH OF CHILDREN.**

*Before using any DUR-A-FLEX, Inc. product, be sure the Material Safety Data Sheet is read and understood*



**DUR-A-FLEX**  
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95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

<b>SECTION I - IDENTIFICATION</b>		HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	3
IDENTITY (As Used on Label) <b>Dur-A-Glaze ESD Primer Hardener</b>			Flammability	1
COMMON NAME Polyamine Epoxy Hardener			Reactivity	0
			Personal Protection	G

SECTION II - PRODUCT COMPONENTS	CAS.#	OSHA PEL	ACGIH TLV
Nonyl Phenol	25154-52-3	N.E. <sup>1</sup>	N.E.
Piperazineethaneamine	140-31-8	N.E.	N.E.
Polyoxalkylenamine	9046-10-0	N.E.	N.E.

<sup>1</sup>None Established

T.S.C.A. Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	485°F	Specific Gravity (H2O = 1)	<1
Vapor Pressure (mm Hg)	0.02	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	0 g/L		
Solubility in Water	Partially soluble.		
Appearance and Odor	Pale yellow colored liquid. Amine odor.		

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	220°F	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media Dry chemicals, carbon dioxide, foam, water spray.

Special Firefighting Procedures

Firefighters should wear full emergency equipment with self-contained breathing apparatus. Irritating and/or toxic gases may be generated by fire.

Unusual Fire and Explosion Hazards

Cool fire - exposed containers with cold water spray to prevent pressure build-up that may rupture the container.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Keep container closed when not in use.

Incompatibility (Materials to Avoid) Strong oxidizers and acids.

Hazardous Decomposition or Byproducts By Fire- carbon monoxide, carbon dioxide, aldehydes, nitrogen.

Hazardous Polymerization	May Occur		Conditions to Avoid Uncontrolled reaction with epoxy resins. Avoid breathing fumes generated by hardener and epoxy mixture when not used within established pot life.
	Will Not Occur	X	

**SECTION VI - HEALTH HAZARD DATA**

Route(s) of Entry:	Inhalation? YES	Skin? YES	Ingestion? YES
Signs and Symptoms of Exposure	Irritation on skin.		
Health Hazards (Acute and Chronic)			
ACUTE - Irritation on skin and dermatitis.			
CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure.			
Carcinogenicity:	NTP? NO	IARC Monographs? NO	OSHA Regulated? NO
Medical Conditions Generally Aggravated by Exposure			
May aggravate existing respiratory or dermatitis condition.			
Emergency and First Aid Procedures			
EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.			
SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.			
INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.			
INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.			
NOTE* Persons with lung disorders or who are sensitized should not use this product.			

**SECTION VII - CONTROL MEASURES**

Respiratory Protection (Specify Type)			
Provide adequate exhaust ventilation; use a NIOSH - approved respirator if PELs/TLVs are exceeded.			
Ventilation	Local Exhaust	If needed.	Special None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.	
Protective Gloves	Natural or Neoprene gloves.		Eye Protection Splash goggles or face shield.
Other Protective Clothing or Equipment			
Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must be still be worn. An eye wash station or an adequate supply of clean water must be available at work area.			
Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.			

**SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE**

Steps to be Taken in Case Material is Released or Spilled	
Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.	
Waste Disposal Method	
Dispose in accordance with Federal, State, and Local requirements.	
Precautions to be Taken in Handling and Storing	
Keep containers tightly closed when not in use.	
Other Precautions	NONE KNOWN.
Prepared by	Samet Dy - Chemist

**PLEASE NOTE** "The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."



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<b>SECTION I - IDENTIFICATION</b>	<b>HAZARD RATING</b> 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	1
		Flammability	1
		Reactivity	0
		Personal Protection	G
<b>IDENTITY (As Used on Label)</b> DUR-A-GLAZE ESD Primer RESIN			
<b>COMMON NAME</b> Pigmented Epoxy Resin			

SECTION II - PRODUCT COMPONENTS	CAS.#	%	OSHA PEL	ACGIH TLV
Diglycidyl Ether Bisphenol A Epoxy Resin	25085-99-8	75-87	N.E.* <sup>1</sup>	N.E.
Aliphatic Glycidyl Ether Diluent	68609-97-2	13-25	N.E.	N.E.
Carbon black, Graphite	7782-42-5	2-12	2.0 mg/M3	2.0 mg/M3
Carbon Fiber	7440-44-0	0-5	2.0 mg/M3	2.0 mg/M3

\*<sup>1</sup>None Established.

T.S.C.A Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOURS EMERGENCY NUMBER 1-800-424-9300\***

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS			
Boiling Point	N/A	Specific Gravity (H <sub>2</sub> O = 1)	higher than 1
Vapor Pressure (mm Hg)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	0 g/L		
Solubility in Water	None		
Appearance and Odor	Black Viscous liquid. Mild characteristic odor.		

SECTION IV - FIRE and EXPLOSION HAZARD DATA			
Flash Point (Closed Cup Method)	485°F	Flammable Limits	LEL: N/A UEL: N/A
Extinguishing Media	Foam, CO <sub>2</sub> , Dry Chemical, Water Spray.		
Special Firefighting Procedures	Firefighters should wear full emergency equipment with self-contained breathing apparatus.		
Unusual Fire and Explosion Hazards	Cool fire - exposed containers with cold water spray to prevent pressure build - up that may rupture the container. Combustion products may be toxic.		

SECTION V - REACTIVITY DATA			
Stability	Unstable		Conditions to Avoid
	Stable	X	Excess heating over long periods of time degrades the resin.
Incompatibility (Materials to Avoid)	Uncontrolled reaction with amines.		
Hazardous Decomposition or Byproducts	Fire- Carbon Monoxide, Carbon Dioxide, Nitrogen Oxide, Aldehydes.		
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with amines.

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Signs and Symptoms of Exposure Irritation on skin.

Health Hazards (Acute and Chronic)

ACUTE - Irritation on skin and dermatitis.

CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization.

Sensitized persons may experience rapid irritation of skin upon exposure.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Medical Conditions

Generally Aggravated by Exposure Allergy, skin disorders.

Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.

INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.

INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

Note: Persons with lung disorders or who are sensitized should not use this product.

## SECTION VII - CONTROL MEASURES

Respiratory Protection (Specify Type)

"Provide adequate exhaust ventilation; use a NIOSH - approved respirator if PELS/TLVS are exceeded."

Ventilation	Local Exhaust	If needed.	Special	None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.		

Protective Gloves	Natural or Neoprene gloves.	Eye Protection	Splash goggles or face shield.
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Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must be still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

Waste Disposal Method

Dispose in accordance with Federal, State, and Local requirements.

Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions NONE KNOWN.

Prepared by Samet Dy - Chemist

**PLEASE  
NOTE**

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## DUR-A-GARD ESD

### DESCRIPTION

DUR-A-GARD ESD is a 2-component, pigmented 100% solids static dissipative coating. This coating provides a static dissipative ( $10^6$ – $10^9$   $\Omega$ /Square) surface with a high gloss finish. DUR-A-GARD ESD provides an average of 14v Body Voltage Generation when utilizing dissipative footwear. Resistance readings are consistent for the life of the floor and are independent of ambient humidity. DUR-A-GARD ESD protects new and existing concrete floors from many chemicals and was designed for ultimate cleanability. The system is designed for areas where dirt or dust cannot be tolerated while providing static dissipation to protect against electrostatic discharge.

### BENEFITS

- Static Dissipative
- Easy to Clean
- 14v Avg. BVG
- Durable
- Stain Resistant
- Dissipates 5000 Volt charge to Zero in 0.01 seconds

### COLORS

DUR-A-GARD ESD is available in Arctic Grey, Medium Grey, Slate Grey Smoke Blue, Tile Red, and Beige.

### TYPICAL USES

- Pharmaceutical Facilities
- Processing Areas
- Plastic Manufacturing
- Electronics Assembly
- Clean Rooms
- Packaging Lines
- Laboratories

### SURFACE PREPARATION

This product requires preparation in order to perform as expected. Substrate must be profiled, clean, sound, and dry. Substrate must be primed with DUR-A-GLAZE #4 ESD PRIMER. Please refer to the Surface Preparation Guidelines on our website for more information.

### APPLICATION METHOD / SPREAD RATES

Please refer to the DUR-A-GLAZE #4 ESD PRIMER / DUR-A-GARD ESD Application Instructions for more information.

### LIMITATIONS

This product is best suited for application in temperatures between 60°F and 85°F. Top-coating with non-conductive waxes or finishes will render the static dissipative properties ineffective. This product is not intended for use in munitions or explosive manufacturing facilities.

### PACKAGING

DUR-A-GARD ESD packaged in 1-gallon cans or 5-gallon pails. Shelf life is 6 months in unopened containers.

### CLEANING

This product is considered a low maintenance flooring solution however, certain textures and service environments do require certain procedures. Please refer to the master Cleaning Guide on our website.

### GUIDE SPECIFICATIONS

This product is part of the DUR-A-FLEX family of polymer systems. Please refer to the master Specifier's Guide for complete three part guide specs.

### JOINT GUIDELINES

Refer to the Joint Guidelines for complete details on our website.

## TECHNICAL INFORMATION

Color	Arctic Grey, Beige, Medium Grey, Slate Grey Smoke Blue, and Tile Red
Mixed Viscosity at 70° F	1,700 cps
Pot life at 70° F	20 – 25 Minutes
Cure Time, Touch Dry at 70° F	8 – 10 Hours
Cured Film Thickness	16 mils
Toxicity	Non – Toxic, USDA Approved

Physical Property	Test Method	Result
Surface Resistivity	ASTM D-257	10 <sup>6</sup> -10 <sup>9</sup> Ω/Square
Static Decay	Mil-Std-3010, Method 4046	0.01 Seconds
Body Voltage Generation (with dissipative footwear)	ESD STM 97.2	14v
Compressive Strength	ASTM D-695 ASTM C-579	16,000 psi 10,500 psi
Tensile Strength	ASTM D-638 ASTM C-307	3,000 psi 1,950 psi
Tensile Elongation	ASTM D-638	7.50%
Flexural Strength	ASTM D-790 ASTM C-580	4,000 psi 2,900 psi
Hardness (Shore D)	ASTM D-2240	75-80
Linear Shrinkage	ASTM D-2566	0.02%
Linear Expansion	ASTM D-696	2 × 10 <sup>-5</sup>
Bond Strength to Concrete	ASTM D-4541	400 psi substrate fails
Indentation	MIL D-3134	.025 MAX
Impact Resistance	MIL D-3134	Pass
Water Absorption	ASTM D-570	0.04%
Heat Resistance Limitation		140°F – 200°F
Flammability	ASTM D-570	Self Extinguishing
Flame Spread/NFPA 101	ASTM E-84	Class A
Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles	ASTM C-501	40 mg loss
Coefficient of Friction	ASTM D-2047	0.7
VOC Content		7.45 g/l

### DRAWINGS AND DETAILS

Standard CAD drawings and details are available for coves, drains, breaches, transitions, etc. Please refer to the master Drawings and Details guide for actual drawings.

### MOISTURE CONCERNS

Please refer to the Floor Evaluation Flow Chart in the Contractor's Center of our website for a step-by-step process to determine the condition of the concrete.

### CAUTION

**Slight batch-to-batch color variations may occur. When ordering to match a previous color, inquire if the same batch number or quality control number is still available.** Follow the Hazardous Materials Identification System labeling guide for proper personal protective equipment to use when handling this product. Use only as directed. **KEEP OUT OF REACH OF CHILDREN.**

*Before using any DUR-A-FLEX, Inc. product, be sure the Material Safety Data Sheet is read and understood.*

## **DUR-A-GLAZE#4 ESD PRIMER / DUR-A-GARD ESD**

**IMPORTANT!** Read these instructions carefully several days prior to starting your work. Seek answers to any questions you may have before you begin. DUR-A-FLEX, Inc. maintains a Technical Staff that will be glad to answer your questions and give you advice pertaining to your particular installation.

### **INSTALLATION OVERVIEW**

The general steps required to install this system are:

1. Prepare the slab-shot blast, patch, honor joints
2. Prime with DUR-A-GLAZE #4 ESD PRIMER
3. Install copper foil tape
4. Install DUR-A-GARD ESD topcoat
5. Test resistivity at 24 hrs.

### **SURFACE PREPARATION**

Surface must be sound, dry and perfectly clean, free of all oil, grease, detergent film, sealers and/or curing compounds. A surface profile of 10 to 15 mils is appropriate for most applications. All paint should be removed unless it is a properly applied, totally de-glossed, high quality epoxy. Upper level rooms, like mechanical rooms, bathrooms, or wet process areas that have space below should receive ELAST-O-COAT seamless fluid applied membrane. Please refer to the DUR-A-FLEX Surface Preparation Guide on our website for detailed instructions.

### **JOINT GUIDELINES**

Refer to the Joint Guidelines for complete details on our website.

### **MIXING AREA**

Select a convenient mix area and protect the surface from spillage by covering with a layer of cardboard and/or sheet of plastic. Be generous with the amount of space you allocate for this function. The more comfortably your mixer works, the less likely you are to have a "mix error". Make ready all necessary tools, mix and measure containers, etc. **DO NOT MIX ANY EPOXY UNTIL READY FOR IMMEDIATE USE.** Once hardener and resin are combined, it must be used without delay, working time is dependent on size of batch and the temperature of the floor and product. Apply masking tape wherever coating is intended to stop. To obtain neat, straight, chip resistant edges at termination points and/or drains, a "keyed edge" must be installed.

### **PRE-PATCH**

Do pre-patch badly eroded, spalled or cracked areas with DUR-A-CRETE. Use ELAST-O-COAT for moving joints, and DUR-A-GLAZE #4 mixed with NO-SAG #2 or FLINTSHOT for non-moving joints. **BE SURE TO LEAVE AS LITTLE EXCESS AS POSSIBLE AS IT WILL BE HIGHLIGHTED IN SUCCESSIVE STEPS.**

### **PRIMING WITH DUR-A-GLAZE #4 ESD PRIMER**

All surfaces must be primed with DUR-A-GLAZE #4 ESD PRIMER as soon as the surface has been prepared. Due to the porosity of the concrete, the possibility of out gassing may occur after shot blasting, if this occurs, a second primer coat is needed.

SIMONIZ 969 Detergent/Degreaser is recommended to clean oily concrete slabs.

Be sure to apply primer **before** oil has a chance to "wick" up to the top of the slab and migrate across the surface.

1. Pre-mix hardener and resin components separately before combining.
2. DUR-A-GLAZE #4 ESD PRIMER is mixed 1 part Hardener to 2 parts Resin mix ratio. Measure out 1/2 gallon of DUR-A-GLAZE #4 ESD PRIMER hardener and 1 gallon of DUR-A-GLAZE #4 ESD PRIMER resin. When combining, be sure to add the hardener first. Add the resin and scrape out the container. Be careful to pour both hardener and resin into the center of the mixing pail. Mix the blended epoxy with a slow speed power drill with a Jiffler mixing blade for 3 minutes. Always scrape the sides and bottom of the mixing bucket to assure thorough blending.
3. Pour a 4 to 6 inch "ribbon" of blended epoxy onto the floor (typically along the far wall or a joint). DUR-A-GLAZE #4 ESD PRIMER is typically applied at 200 Sq Ft per gallon to yield 8 mils DFT per coat with a 1/8" notched squeegee. Back roll with a quality non-shed 3/8" nap roller. Cross roll entire area as you go, while wearing spiked shoes. Be sure to remove any impurities as you see them. It is much harder to cut or grind them out after the product has cured. Allow to cure.

### **COPPER FOIL TAPE INSTALLATION**

Install Copper foil tape conductive adhesive to ground (such as metal support columns). Copper foil tape is available from McMaster-Carr Company (www.mcmaster.com). Dur-A-Flex, Inc. recommends using the 1/2" tape with conductive adhesive part number 76555A642. Copper foil tape should be installed at one point per 1,000 square feet minimum.

### **QUALITY CONTROL**

The color of DUR-A-GARD ESD resin may vary slightly from batch to batch. It is recommended that the lot number on the side of the resin pail be checked, if lot numbers are different, segregate and apply each lot continuously to minimize slight color variations on the floor.

### **TOP COAT WITH DUR-A-GARD ESD**

After priming with DUR-A-GLAZE #4 ESD PRIMER and installing Copper foil tape to grounds, Topcoat with DUR-A-GARD ESD.

1. Pre-mix hardener and resin components separately before combining.
2. DUR-A-GARD ESD is mixed in a 1part Hardener to 3 parts Resin mix ratio. Measure out 1/2 gallon of DUR-A-GARD ESD hardener and 1 1/2 gallons of DUR-A-GARD ESD resin. When combining, be sure to add the hardener first. Add the resin and scrape out the container. Be careful to pour both hardener and resin into the center of the mixing pail. Mix the blended epoxy with a slow speed power drill with a Jiffler mixing blade for 3 minutes. Always scrape the sides and bottom of the mixing bucket to assure thorough blending.
3. Pour a 4 to 6 inch "ribbon" of blended epoxy onto the floor (typically along the far wall or a joint). DUR-A-GARD ESD is typically applied at 100 Sq Ft per gallon to yield 16 mils DFT per coat with a 3/16" notched squeegee and then back rolled with a quality non-shed 3/8" nap roller. Cross roll entire area as you go, while wearing spiked shoes. Be sure to remove any impurities as you see them. It is much harder to cut or grind them out after the product has cured. Allow to cure.
4. Successive coats can be applied to achieve the desired thickness.

THICKNESS OF COATING APPLIED (1000 MILS = 1 INCH)		COVERAGE PER US GALLON 100% SOLIDS SYSTEM	
	20 MILS	80.0	SQ FT/GAL
1/64 IN. =	16 MILS	102.0	SQ FT/GAL
	10 MILS	160.0	SQ FT/GAL
	8 MILS	200.0	SQ FT/GAL

### **TESTING RESISTIVITY**

Once DUR-A-GARD ESD has cured for 24 hours at 70°F, resistance readings should be taken to ensure the floor is reading properly. DUR-A-FLEX, Inc. recommends using the OHM-STAT RT-1000 Megohmmeter from Static Solutions. Floor readings should be tested at 100V and read between 10<sup>6</sup>-10<sup>9</sup> Ω/Square.

### **IMPORTANT!**

**Increasing room temperature to accelerate cure is not recommended, a slight reduction (3°-5°F) from reasonable room temperature may help reduce out gassing. DUR-A-GARD ESD is a high gloss finish and special care should be given to avoid surface contamination. USE SIGNS AND BARRIERS to keep traffic out of the area. Do not allow any water on coated surface for 24-48 hours. Chemical spillage must be prevented for approximately 5 days. NOTE: Use DUR-A-SOLVE or a lacquer thinner for clean up. This product is suitable for applications between 60° and 85° F concrete slab temperature.**

**DO NOT THIN DUR-A-GLAZE #4 ESD PRIMER OR DUR-A-GARD ESD WITH SOLVENT.**

### **CAUTION**

Follow the Hazardous Materials Identification System labeling guide for proper personal protective equipment to use when handling this product. Use only as directed. KEEP OUT OF REACH OF CHILDREN.

***Before using any DUR-A-FLEX, Inc. Product, be sure the Material Safety Data Sheet is read and understood.***



95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

<b>SECTION I - IDENTIFICATION</b>		HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	1
<b>IDENTITY (As Used on Label)</b> <b>DUR-A-GARD ESD RESIN: all colors</b>			Flammability	2
<b>COMMON NAME</b> Pigmented Epoxy Resin			Reactivity	0
			Personal Protection	G

SECTION II - PRODUCT COMPONENTS	CAS.#	OSHA PEL	ACGIH TLV
Diglycidyl Ether Bisphenol A Epoxy Resin	25085-99-8	N.E. <sup>*1</sup>	N.E.
Aliphatic Glycidyl Ether Diluent	68609-97-2	N.E.	N.E.
Rutile Titanium Dioxide	13463-67-7	10mg/m <sup>3</sup>	10mg/m <sup>3</sup>
Benzyl Alcohol	100-51-600	N.E.	N.E.
Mixed Mineral Pigment	Proprietary <sup>*2</sup>	0.5mg/m <sup>3</sup>	0.5mg/m <sup>3</sup>
1-Methoxy-2-Propanol	107-98-2	100ppm	360mg/m <sup>3</sup>
2-Methoxy-1-Propanol	1589-47-5	100ppm	360mg/m <sup>3</sup>
Inorganic Iron Oxides	1309-37-1	10mg/m <sup>3</sup>	10mg/m <sup>3</sup>
Aliphatic Glycidyl Ether	41638-13-5	N.E.	N.E.

<sup>\*1</sup>None Established

<sup>\*2</sup>The manufacturer of the component states that they will provide additional information to a health professional in the event of a medical emergency.

T.S.C.A Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOURS EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A	Specific Gravity (H2O = 1)	1.55
Vapor Pressure (mm Hg)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	63 g/L		
Solubility in Water	Slight (methoxy propanol is miscible)		
Appearance and Odor	Pigmented viscous liquid. Mild characteristic odor.		

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	485°F	Flammable Limits	LEL N/A	UEL N/A
Extinguishing Media	Water spray, Foam, CO <sub>2</sub> , Dry Chemicals.			
Special Firefighting Procedures	Wear full protective equipment including self-contained breathing apparatus.			
Unusual Fire and Explosion Hazards	Cool storage containers with water spray to prevent pressure build-up that may rupture the containers. Combustion products may be toxic.			

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Excess heating over long periods of time degrades the resin.
Incompatibility (Materials to Avoid)	Uncontrolled reaction with amines.		
Hazardous Decomposition or Byproducts	By Fire - Carbon monoxide, Carbon dioxide, Nitrogen oxides, Aldehydes.		
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with amines.

**SECTION VI - HEALTH HAZARD DATA**

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Signs and Symptoms of Exposure	Irritation of skin.
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Health Hazards (Acute and Chronic)

ACUTE - Irritation of skin and dermatitis.

CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure.

Persons with lung disorders or who are sensitized should not use this product.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Medical Conditions

Generally Aggravated by Exposure	Allergy, skin disorders.
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Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.

INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.

INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

**SECTION VII - CONTROL MEASURES**

Respiratory Protection (Specify Type)

"Provide adequate exhaust ventilation; use a NIOSH approved respirator if PELS/TLVS are exceeded."

Ventilation	Local Exhaust	If needed.	Special	None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.		

Protective Gloves	Natural rubber or Neoprene.	Eye Protection	Splash goggles or face shield.
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Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices	Enforce careful handling to prevent splashing. Wash thoroughly after use.
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**SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE**

Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

Waste Disposal Method

Dispose in accordance with Federal, State and Local requirements.

Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions	NONE KNOWN.
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Prepared by	Samet Dy - Chemist
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**PLEASE NOTE** "The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."



95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

## SECTION I - IDENTIFICATION

**IDENTITY (As Used on Label)** DUR-A-GARD ESD HARDENER

**COMMON NAME** Cycloaliphatic Diamine Epoxy Hardener

HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	3
	Flammability	1
	Reactivity	0
	Personal Protection	G

## SECTION II - PRODUCT COMPONENTS

	CAS.#	OSHA PEL	ACGIH TLV
Benzyl Alcohol	100-51-6	N.E. *1	N.E.
Isophorone Diamine	2855-13-2	N.E.	N.E.
1, 5 Pentanediamine, 2 Methyl	15520-10-1	N.E.	N.E.
N, Aminoethyl Piperazine	140-31-8	N.E.	N.E.
Diglycidyl Ether Bisphenol A Epoxy Resin	25085-99-8	N.E.	N.E.
Salicylic Acid	69-72-7	N.E.	N.E.

\*1 None Established

T.S.C.A. Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	425°F	Specific Gravity (H2O = 1)	0.991
Vapor Pressure (mm Hg)	0.1	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	63 g/L		

Solubility in Water Partially soluble.  
Appearance and Odor Clear low viscosity liquid. Mild amine odor.

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	220°F	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media Water spray, Foam, CO<sub>2</sub>, Dry Chemicals.

Special Firefighting Procedures

Wear full protective equipment including self-contained breathing apparatus.

Irritating and/or toxic gases may be generated by fire.

Unusual Fire and Explosion Hazards

Cool storage containers with water spray to prevent pressure build-up that may rupture the containers.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Keep containers closed when not in use.

Incompatibility (Materials to Avoid) Strong oxidizers and acids.

Hazardous Decomposition or Byproducts By Fire - Carbon monoxide, Carbon dioxide, Nitrogen oxides.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with epoxy resins.

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? YES	Skin? YES	Ingestion? YES
Signs and Symptoms of Exposure	Irritation of skin.		
Health Hazards (Acute and Chronic)			
ACUTE - Irritation of skin and dermatitis.			
CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure.			
Persons with lung disorders or who are sensitized should not use this product.			
Carcinogenicity:	NTP? NO	IARC Monographs? NO	OSHA Regulated? NO

Medical Conditions  
Generally Aggravated by Exposure Allergy, skin disorders.

### Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.  
SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.  
INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.  
INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

## SECTION VII - CONTROL MEASURES

### Respiratory Protection (Specify Type)

"Provide adequate exhaust ventilation; use a NIOSH approved respirator if PELS/TLVS are exceeded."

Ventilation	Local Exhaust	If needed.	Special	None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.		
Protective Gloves	Natural rubber or Neoprene.		Eye Protection	Splash goggles or face shield.

### Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

### Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

### Waste Disposal Method

Dispose in accordance with Federal, State and Local requirements.

### Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions NONE KNOWN.

Prepared by Samet Dy - Chemist

"The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."

## ARMOR-STAT ESD FLOOR SYSTEM

### DESCRIPTION

ARMOR-STAT ESD is an epoxy/urethane, pigmented, static dissipative floor coating system. This system provides a static dissipative ( $10^6$ - $10^9$   $\Omega$ /Square) floor from primer through the satin finish topcoat. ARMOR-STAT ESD provides an average of 5v Body Voltage Generation when utilizing dissipative footwear. Resistance readings are consistent for the life of the floor and are independent of ambient humidity. ARMOR-STAT ESD protects new and existing concrete floors from many chemicals and was designed to provide the ultimate in wear resistance, chemical resistance and cleanability. The system is designed for areas where dirt or dust cannot be tolerated while providing static dissipation to protect against electrostatic discharge.

### BENEFITS

- Static Dissipative
- Dissipates 5000 Volt charge to Zero in 0.01 seconds
- 5v Avg. BVG w/dissipative footwear
- UV Stable
- VOC Compliant
- Durable
- Superior Wear Resistance
- Excellent Stain Resistance
- Easy to Clean

### COLORS

ARMOR-STAT ESD is available in Arctic Grey, Medium Grey, Slate Grey, Smoke Blue and Beige.

### TYPICAL USES

- Pharmaceutical Facilities
- Packaging Lines
- Plastic Manufacturing
- Electronics Assembly
- Processing Areas
- Clean Rooms
- Laboratories
- AGV Warehouses

### SURFACE PREPARATION

This product requires preparation in order to perform as expected. Substrate must be profiled, clean, sound, and dry. Substrate must be primed with DUR-A-GLAZE #4 ESD PRIMER. Please refer to the Dur-A-Flex, Inc. Surface Preparation Guidelines for more information.

### APPLICATION METHOD / SPREAD RATES

Please refer to the ARMOR-STAT ESD Application Instructions for more information.

### LIMITATIONS

This product is best suited for application in temperatures between 60°F and 85°F. Top-coating with non-conductive waxes or finishes will render the static dissipative properties ineffective. This product is not intended for use in munitions or explosive manufacturing facilities.

### PACKAGING

ARMOR-STAT ESD is packaged in kits consisting of resin, hardener, and grit (where applicable). Shelf life is 6 months in unopened containers.

### CLEANING

This product is considered a low maintenance flooring solution however, certain textures and service environments do require certain procedures. Please refer to our Cleaning Guide in the Contractor Center at [www.dur-a-flex.com](http://www.dur-a-flex.com) for complete details.

### GUIDE SPECIFICATIONS

This product is part of the DUR-A-FLEX family of polymer systems. Please refer to the master "Specifier's Guide" for complete three part guide specs.

### JOINT GUIDELINES

Refer to the Joint Guidelines in the Contractor Center at [www.dur-a-flex.com](http://www.dur-a-flex.com) for complete details.

## TECHNICAL INFORMATION

Color	Arctic Grey, Beige, Medium Grey, Slate Grey and Smoke Blue	
Cure Time, Touch Dry at 70° F (per component)	8 – 10 Hours	
Cured Film Thickness (nominal)	28 mils	
Toxicity	Non – Toxic, USDA Approved	
Physical Property	Test Method	Result
Surface Resistivity	ASTM D-257	10 <sup>6</sup> -10 <sup>9</sup> Ω/Square
Static Decay	Mil-Std-3010, Method 4046	0.01 Seconds
Body Voltage Generation (with dissipative footwear)	ESD STM 97.2	5v
Compressive Strength	ASTM D-695 ASTM C-579	16,000 psi 10,500 psi
Tensile Strength	ASTM D-638 ASTM C-307	3,000 psi 1,950 psi
Tensile Elongation	ASTM D-638	7.50%
Flexural Strength	ASTM D-790 ASTM C-580	4,000 psi 2,900 psi
Hardness (Shore D)	ASTM D-2240	75-80
Linear Shrinkage	ASTM D-2566	0.02%
Linear Expansion	ASTM D-696	2 × 10 <sup>-3</sup>
Bond Strength to Concrete	ASTM D-4541	400 psi substrate fails
Indentation	MIL D-3134	.025 MAX
Impact Resistance	MIL D-3134	Pass
Water Absorption	ASTM D-570	0.04%
Heat Resistance Limitation		140°F – 200°F
Flammability	ASTM D-570	Self Extinguishing
Flame Spread/NFPA 101	ASTM E-84	Class A
Taber Abrasion Resistance CS17 Wheel 1000 GM Load 1000 Cycles	ASTM D-4060	29 mg loss (without grit) 5 mg loss (with grit)
Coefficient of Friction	ASTM D-2047	0.6
UV Resistance		Excellent
VOC Content		10 g/l

### DRAWINGS AND DETAILS

Standard CAD drawings and details are available for coves, drains, breaches, transitions, etc. Please refer to the master Detail Drawings in the Architect Center at [www.dur-a-flex.com](http://www.dur-a-flex.com) for actual drawings.

### MOISTURE CONCERNS

Please refer to the Floor Evaluation Guide in the Contractor's Center of our website for a step-by-step process to determine the condition of the concrete.

### CAUTION

**Slight batch-to-batch color variations may occur. When ordering to match a previous color, inquire if the same batch number or quality control number is still available.** Follow the Hazardous Materials Identification System labeling guide for proper personal protective equipment to use when handling this product. Use only as directed. **KEEP OUT OF REACH OF CHILDREN.**

**Before using any DUR-A-FLEX, Inc. product, be sure the Material Safety Data Sheet is read and understood**

## ARMOR-STAT ESD FLOOR SYSTEM

**IMPORTANT!** Read these instructions carefully several days prior to starting your work. Seek answers to any questions you may have before you begin. DUR-A-FLEX, Inc. maintains a Technical Staff that will be glad to answer your questions and give you advice pertaining to your particular installation.

### INSTALLATION OVERVIEW

The general steps required to install this system are:

1. Prepare the slab: shot blast, patch
2. Prime with DUR-A-GLAZE #4 ESD PRIMER
3. Install copper foil grounding tape
4. Install DUR-A-GARD ESD
5. Install ARMOR-STAT ESD TOPCOAT
6. Honor joints
7. Test resistivity at 24 hrs.

### SURFACE PREPARATION

Surface must be sound, dry and perfectly clean, free of all oil, grease, detergent film, sealers and/or curing compounds. A surface profile of CSP 2 to 3 is appropriate for most applications. All epoxy coatings should be removed unless it is properly bonded, totally de-glossed, high quality epoxy. If going over existing coating apply DUR-A-GLAZE TIE-COAT II. Upper level rooms, like mechanical rooms, bathrooms, or wet process areas that have space below should receive ELAST-O-COAT seamless fluid applied membrane. Please refer to the DUR-A-FLEX **Surface Preparation Guide** for detailed instructions.

### JOINT GUIDELINES

Refer to the **Joint Guidelines** on our website for complete details.

### MIXING AREA

Select a convenient mix area and protect the surface from spillage by covering with a layer of cardboard and/or sheet of plastic. Be generous with the amount of space you allocate for this function. The more comfortably your mixer works, the less likely you are to have a "mix error". Make ready all necessary tools, mix and measure containers, etc. **DO NOT MIX ANY EPOXY UNTIL READY FOR IMMEDIATE USE.** Once hardener and resin are combined, it must be used without delay, working time is dependent on size of batch and the temperature of the floor and product. To obtain neat, straight, chip resistant edges at termination points and/or drains, a "keyed edge" must be installed.

with NO-SAG # 1 for moving joints, and DUR-A-GLAZE #4 mixed with NO-SAG #2 or FLINTSHOT for non-moving joints. **BE SURE TO LEAVE AS LITTLE EXCESS AS POSSIBLE AS IT WILL BE HIGHLIGHTED IN SUCCESSIVE STEPS.** Sanding or grinding pre-patch areas will help to hide deviations.

### PRIMING WITH DUR-A-GLAZE #4 ESD PRIMER

All surfaces must be primed with DUR-A-GLAZE #4 ESD PRIMER as soon as the surface has been prepared. Due to the porosity of the concrete, the possibility of out gassing may occur after shot blasting, if this occurs, a second primer coat is needed.

1. Pre-mix hardener and resin components separately before combining.
2. DUR-A-GLAZE #4 ESD PRIMER is mixed 1 part Hardener to 2 parts Resin. Measure out 1/2 gallon of DUR-A-GLAZE #4 ESD PRIMER Hardener and 1 gallon of DUR-A-GLAZE #4 ESD PRIMER Resin. When combining, be sure to add the hardener first. Add the resin and scrape out the container. Be careful to pour both hardener and resin into the center of the mixing pail. Mix the blended epoxy with a slow speed power drill with a Jiffler mixing blade for 2 minutes. Always scrape the sides and bottom of the mixing bucket to assure thorough blending.
3. Pour a 4 to 6 inch "ribbon" of blended epoxy onto the floor (typically along the far wall or a joint). DUR-A-GLAZE #4 ESD PRIMER is typically applied at 200 Sq Ft per gallon to yield 8 mils DFT per coat with a 1/8" notched squeegee. Back roll with a quality non-shed 3/8" nap roller. While wearing spiked shoes, cross roll entire area as you go. Be sure to remove any impurities as you see them. It is much harder to cut or grind them out after the product has cured. Allow to cure.

## **COPPER FOIL TAPE INSTALLATION**

Install Copper foil tape conductive adhesive to ground (such as metal support columns). Copper foil tape is available from McMaster-Carr Company ([www.mcmaster.com](http://www.mcmaster.com)). Dur-A-Flex, Inc. recommends using the ½" tape with conductive adhesive part number 76555A642. Copper foil tape should be installed across joints at each end of the slab and at one point per 1,000 square feet minimum.

## **QUALITY CONTROL**

The color of DUR-A-GARD ESD resin may vary slightly from batch to batch. It is recommended that the lot number on the side of the resin pail be checked, if lot numbers are different, segregate and apply each lot contiguously to minimize slight color variations on the floor.

## **BODY COAT WITH DUR-A-GARD ESD**

After priming with DUR-A-GLAZE #4 ESD PRIMER and installing Copper foil tape to grounds, apply DUR-A-GARD ESD.

1. Pre-mix hardener and resin components separately before combining.

2. DUR-A-GARD ESD is mixed in a 1part Hardener to 3 parts Resin mix ratio. Measure out 1/2 gallon of DUR-A-GARD ESD hardener and 1 1/2 gallons of DUR-A-GARD ESD resin. When combining, be sure to add the hardener first. Add the resin and scrape out the container. Be careful to pour both hardener and resin into the center of the mixing pail. Mix the blended epoxy with a slow speed power drill with a Jiffler mixing blade for 3 minutes. Always scrape the sides and bottom of the mixing bucket to assure thorough blending.

3. Pour a 4 to 6 inch "ribbon" of blended epoxy onto the floor (typically along the far wall or a joint). DUR-A-GARD ESD is applied at 100 Sq Ft per gallon to yield 16 mils WFT per coat with a 3/16" notched squeegee and then back rolled with a quality non-shed 3/8" nap roller. While wearing spiked shoes, cross roll entire area as you go. Be sure to remove any impurities as you see them. Allow to cure.

## **TOPCOAT WITH ARMOR-STAT ESD TOPCOAT**

ARMOR-STAT ESD TOPCOAT is typically applied using the dip and roll method with a 18" long 3/8" nap roller with a Wide Boy™ or Big Ben™ frame. Applicators should wear spiked shoes (cross roll).

DUR-A-FLEX, Inc. recommends Big Ben™ roller frames when using white or light colors.

1. Pour ARMOR-STAT ESD hardener into a 2 gallon bucket. Pre-mix the Armor-Stat resin by shaking the resin can vigorously or mix with a Jiffler for 45 seconds. Add ARMOR-STAT ESD resin and mix for 30 seconds. If specified, slowly add ARMOR-STAT ESD Grit and continue mixing for an additional minute. Pour a small amount into a dip and roll tray that is large enough to accommodate an 18 inch roller.

2. Dip roller cover into paint tray and roll off excess. Apply two 8-10 foot long paths left to right then right to left. Re-wet roller and continue application by using up & down passes. If not even, re-roll up and down until uniform. A final cross-roll is necessary to even out roller lines within 10 minutes. Spread at a rate of 560 sq. ft. per kit with grit, and 535 sq. ft. per kit without grit.

3. Occasionally remix ARMOR-STAT ESD TOPCOAT in tray or bucket with a stick to prevent settling of the grit/powder.

## **TESTING RESISTIVITY**

Once ARMOR-STAT ESD TOPCOAT has cured for 24 hours at 70°F, resistance readings should be taken to ensure the floor is reading properly. DUR-A-FLEX, Inc. recommends using the OHM-STAT RT-1000 Megohmmeter from Static Solutions. Floor readings should be tested at 100V and read between 10<sup>6</sup>-10<sup>9</sup> Ω/Square.

## **IMPORTANT!**

**Increasing room temperature to accelerate cure is not recommended, a slight reduction (3°-5°F) from reasonable room temperature may help reduce out gassing. Special care should be given to avoid surface contamination. USE SIGNS AND BARRIERS** to keep traffic out of the area. Do not allow any water on coated surface for 24-48 hours, depending on temperature. Chemical spillage must be prevented for approximately 5 days. **NOTE:** Use DUR-A-SOLVE for clean up. This product is suitable for applications between 60° and 85° F concrete slab temperature.

**DO NOT THIN DUR-A-GLAZE #4 ESD PRIMER OR DUR-A-GARD ESD WITH SOLVENT.**

## **CAUTION**

Follow the Hazardous Materials Identification System labeling guide for proper personal protective equipment to use when handling this product. Use only as directed. **KEEP OUT OF REACH OF CHILDREN.**

*Before using any DUR-A-FLEX, Inc. Product, be sure the Material Safety Data Sheet is read and understood.*



**DUR-A-FLEX**  
INNOVATION FROM THE FLOOR UP

95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

<b>SECTION I - IDENTIFICATION</b>		HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	3
IDENTITY (As Used on Label) <b>Dur-A-Glaze ESD Primer Hardener</b>			Flammability	1
COMMON NAME Polyamine Epoxy Hardener			Reactivity	0
			Personal Protection	G

SECTION II - PRODUCT COMPONENTS	CAS.#	OSHA PEL	ACGIH TLV
Nonyl Phenol	25154-52-3	N.E. <sup>1</sup>	N.E.
Piperazineethaneamine	140-31-8	N.E.	N.E.
Polyoxalkylenamine	9046-10-0	N.E.	N.E.

<sup>1</sup>None Established

T.S.C.A. Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	485°F	Specific Gravity (H2O = 1)	<1
Vapor Pressure (mm Hg)	0.02	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	0 g/L		
Solubility in Water	Partially soluble.		
Appearance and Odor	Pale yellow colored liquid. Amine odor.		

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	220°F	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media Dry chemicals, carbon dioxide, foam, water spray.

Special Firefighting Procedures

Firefighters should wear full emergency equipment with self-contained breathing apparatus. Irritating and/or toxic gases may be generated by fire.

Unusual Fire and Explosion Hazards

Cool fire - exposed containers with cold water spray to prevent pressure build-up that may rupture the container.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Keep container closed when not in use.
Incompatibility (Materials to Avoid)	Strong oxidizers and acids.		
Hazardous Decomposition or Byproducts	By Fire- carbon monoxide, carbon dioxide, aldehydes, nitrogen.		
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with epoxy resins. Avoid breathing fumes generated by hardener and epoxy mixture when not used within established pot life.

**SECTION VI - HEALTH HAZARD DATA**

Route(s) of Entry:	Inhalation? YES	Skin? YES	Ingestion? YES
Signs and Symptoms of Exposure	Irritation on skin.		
Health Hazards (Acute and Chronic)			
ACUTE - Irritation on skin and dermatitis.			
CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure.			
Carcinogenicity:	NTP? NO	IARC Monographs? NO	OSHA Regulated? NO
Medical Conditions Generally Aggravated by Exposure			
May aggravate existing respiratory or dermatitis condition.			
Emergency and First Aid Procedures			
EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.			
SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.			
INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.			
INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.			
NOTE* Persons with lung disorders or who are sensitized should not use this product.			

**SECTION VII - CONTROL MEASURES**

Respiratory Protection (Specify Type)			
Provide adequate exhaust ventilation; use a NIOSH - approved respirator if PELs/TLVs are exceeded.			
Ventilation	Local Exhaust	If needed.	Special None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.	
Protective Gloves	Natural or Neoprene gloves.		Eye Protection Splash goggles or face shield.
Other Protective Clothing or Equipment			
Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must be still be worn. An eye wash station or an adequate supply of clean water must be available at work area.			
Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.			

**SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE**

Steps to be Taken in Case Material is Released or Spilled	
Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.	
Waste Disposal Method	
Dispose in accordance with Federal, State, and Local requirements.	
Precautions to be Taken in Handling and Storing	
Keep containers tightly closed when not in use.	
Other Precautions	NONE KNOWN.
Prepared by	Samet Dy - Chemist

**PLEASE NOTE** "The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."



**DUR-A-FLEX**  
INNOVATION FROM THE FLOOR UP

95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

<b>SECTION I - IDENTIFICATION</b>		HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	1
IDENTITY (As Used on Label) <b>DUR-A-GLAZE ESD Primer RESIN</b>			Flammability	1
COMMON NAME Pigmented Epoxy Resin			Reactivity	0
			Personal Protection	G

SECTION II - PRODUCT COMPONENTS	CAS.#	%	OSHA PEL	ACGIH TLV
Diglycidyl Ether Bisphenol A Epoxy Resin	25085-99-8	75-87	N.E.* <sup>1</sup>	N.E.
Aliphatic Glycidyl Ether Diluent	68609-97-2	13-25	N.E.	N.E.
Carbon black, Graphite	7782-42-5	2-12	2.0 mg/M3	2.0 mg/M3
Carbon Fiber	7440-44-0	0-5	2.0 mg/M3	2.0 mg/M3

\*<sup>1</sup>None Established.

T.S.C.A Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOURS EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A	Specific Gravity (H2O = 1)	higher than 1
Vapor Pressure (mm Hg)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	0 g/L		
Solubility in Water	None		
Appearance and Odor	Black Viscous liquid. Mild characteristic odor.		

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	485°F	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media Foam, CO<sub>2</sub>, Dry Chemical, Water Spray.

Special Firefighting Procedures

Firefighters should wear full emergency equipment with self-contained breathing apparatus.

Unusual Fire and Explosion Hazards

Cool fire - exposed containers with cold water spray to prevent pressure build - up that may rupture the container. Combustion products may be toxic.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Excess heating over long periods of time degrades the resin.

Incompatibility (Materials to Avoid) Uncontrolled reaction with amines.

Hazardous Decomposition or Byproducts Fire- Carbon Monoxide, Carbon Dioxide, Nitrogen Oxide, Aldehydes.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with amines.

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Signs and Symptoms of Exposure Irritation on skin.

Health Hazards (Acute and Chronic)

ACUTE - Irritation on skin and dermatitis.

CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization.

Sensitized persons may experience rapid irritation of skin upon exposure.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Medical Conditions

Generally Aggravated by Exposure Allergy, skin disorders.

Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.

INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.

INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

Note: Persons with lung disorders or who are sensitized should not use this product.

## SECTION VII - CONTROL MEASURES

Respiratory Protection (Specify Type)

"Provide adequate exhaust ventilation; use a NIOSH - approved respirator if PELS/TLVS are exceeded."

Ventilation	Local Exhaust	If needed.	Special	None known.
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	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.
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Protective Gloves	Natural or Neoprene gloves.	Eye Protection	Splash goggles or face shield.
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Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must be still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

Waste Disposal Method

Dispose in accordance with Federal, State, and Local requirements.

Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions NONE KNOWN.

Prepared by Samet Dy - Chemist

**PLEASE  
NOTE**

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95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

## SECTION I - IDENTIFICATION

**IDENTITY (As Used on Label)** DUR-A-GARD ESD HARDENER

**COMMON NAME** Cycloaliphatic Diamine Epoxy Hardener

HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	3
	Flammability	1
	Reactivity	0
	Personal Protection	G

## SECTION II - PRODUCT COMPONENTS

	CAS.#	OSHA PEL	ACGIH TLV
Benzyl Alcohol	100-51-6	N.E. *1	N.E.
Isophorone Diamine	2855-13-2	N.E.	N.E.
1, 5 Pentanediamine, 2 Methyl	15520-10-1	N.E.	N.E.
N, Aminoethyl Piperazine	140-31-8	N.E.	N.E.
Diglycidyl Ether Bisphenol A Epoxy Resin	25085-99-8	N.E.	N.E.
Salicylic Acid	69-72-7	N.E.	N.E.

\*1 None Established

T.S.C.A. Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	425°F	Specific Gravity (H2O = 1)	0.991
Vapor Pressure (mm Hg)	0.1	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	63 g/L		

Solubility in Water Partially soluble.  
Appearance and Odor Clear low viscosity liquid. Mild amine odor.

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	220°F	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media Water spray, Foam, CO<sub>2</sub>, Dry Chemicals.

Special Firefighting Procedures

Wear full protective equipment including self-contained breathing apparatus.

Irritating and/or toxic gases may be generated by fire.

Unusual Fire and Explosion Hazards

Cool storage containers with water spray to prevent pressure build-up that may rupture the containers.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Keep containers closed when not in use.

Incompatibility (Materials to Avoid) Strong oxidizers and acids.

Hazardous Decomposition or Byproducts By Fire - Carbon monoxide, Carbon dioxide, Nitrogen oxides.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with epoxy resins.

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation? YES	Skin? YES	Ingestion? YES
Signs and Symptoms of Exposure	Irritation of skin.		
Health Hazards (Acute and Chronic)	ACUTE - Irritation of skin and dermatitis. CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure. Persons with lung disorders or who are sensitized should not use this product.		
Carcinogenicity:	NTP? NO	IARC Monographs? NO	OSHA Regulated? NO

Medical Conditions  
Generally Aggravated by Exposure Allergy, skin disorders.

### Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.  
SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.  
INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.  
INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

## SECTION VII - CONTROL MEASURES

### Respiratory Protection (Specify Type)

"Provide adequate exhaust ventilation; use a NIOSH approved respirator if PELS/TLVS are exceeded."

Ventilation	Local Exhaust	If needed.	Special	None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.		
Protective Gloves	Natural rubber or Neoprene.		Eye Protection	Splash goggles or face shield.

### Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

### Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

### Waste Disposal Method

Dispose in accordance with Federal, State and Local requirements.

### Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions NONE KNOWN.

Prepared by Samet Dy - Chemist

"The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."



95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 8/2/2010

## SECTION I - IDENTIFICATION

**IDENTITY (As Used on Label)** DUR-A-GARD ESD RESIN: all colors

**COMMON NAME** Pigmented Epoxy Resin

HAZARD RATING 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	1
	Flammability	2
	Reactivity	0
	Personal Protection	G

SECTION II - PRODUCT COMPONENTS	CAS.#	OSHA PEL	ACGIH TLV
Diglycidyl Ether Bisphenol A Epoxy Resin	25085-99-8	N.E. <sup>*1</sup>	N.E.
Aliphatic Glycidyl Ether Diluent	68609-97-2	N.E.	N.E.
Rutile Titanium Dioxide	13463-67-7	10mg/m <sup>3</sup>	10mg/m <sup>3</sup>
Benzyl Alcohol	100-51-600	N.E.	N.E.
Mixed Mineral Pigment	Proprietary <sup>*2</sup>	0.5mg/m <sup>3</sup>	0.5mg/m <sup>3</sup>
1-Methoxy-2-Propanol	107-98-2	100ppm	360mg/m <sup>3</sup>
2-Methoxy-1-Propanol	1589-47-5	100ppm	360mg/m <sup>3</sup>
Inorganic Iron Oxides	1309-37-1	10mg/m <sup>3</sup>	10mg/m <sup>3</sup>
Aliphatic Glycidyl Ether	41638-13-5	N.E.	N.E.

<sup>\*1</sup>None Established

<sup>\*2</sup>The manufacturer of the component states that they will provide additional information to a health professional in the event of a medical emergency.

T.S.C.A Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOURS EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A	Specific Gravity (H2O = 1)	1.55
Vapor Pressure (mm Hg)	N/A	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A
Volatile Organic Compounds	63 g/L		
Solubility in Water	Slight (methoxy propanol is miscible)		
Appearance and Odor	Pigmented viscous liquid. Mild characteristic odor.		

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	485°F	Flammable Limits	LEL N/A	UEL N/A
Extinguishing Media	Water spray, Foam, CO <sub>2</sub> , Dry Chemicals.			
Special Firefighting Procedures	Wear full protective equipment including self-contained breathing apparatus.			
Unusual Fire and Explosion Hazards	Cool storage containers with water spray to prevent pressure build-up that may rupture the containers. Combustion products may be toxic.			

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Excess heating over long periods of time degrades the resin.
Incompatibility (Materials to Avoid)	Uncontrolled reaction with amines.		
Hazardous Decomposition or Byproducts	By Fire - Carbon monoxide, Carbon dioxide, Nitrogen oxides, Aldehydes.		
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	Uncontrolled reaction with amines.

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Signs and Symptoms of Exposure      Irritation of skin.

Health Hazards (Acute and Chronic)

ACUTE - Irritation of skin and dermatitis.

CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure.

Persons with lung disorders or who are sensitized should not use this product.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Medical Conditions

Generally Aggravated by Exposure      Allergy, skin disorders.

Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

SKIN - PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.

INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.

INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

## SECTION VII - CONTROL MEASURES

Respiratory Protection (Specify Type)

"Provide adequate exhaust ventilation; use a NIOSH approved respirator if PELS/TLVS are exceeded."

Ventilation	Local Exhaust	If needed.	Special	None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.		

Protective Gloves	Natural rubber or Neoprene.	Eye Protection	Splash goggles or face shield.
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Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices      Enforce careful handling to prevent splashing. Wash thoroughly after use.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

Waste Disposal Method

Dispose in accordance with Federal, State and Local requirements.

Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions      NONE KNOWN.

Prepared by      Samet Dy - Chemist

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# Material Safety Data Sheet

95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

Date Prepared 12/12/2011

<b>SECTION I - IDENTIFICATION</b>	<b>HAZARD RATING</b>	Health	3
	0 = Least	Flammability	2
	1 = Slight	Reactivity	0
	2 = Moderate	Personal Protection	G
<b>IDENTITY (As Used on Label)</b>	Armor-Stat ESD Topcoat Resin: All colors		
<b>COMMON NAME</b>	Pigmented blocked Cycloaliphatic Diamine		
	3 = High		
	4 = Extreme		

SECTION II - PRODUCT COMPONENTS	CAS.#	OSHA PEL	ACGIH TLV
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SECTION II - PRODUCT COMPONENTS	CAS.#	OSHA PEL	ACGIH TLV
Blocked Cycloaliphatic Diamine	Proprietary <sup>2</sup>	N.E. <sup>1</sup>	N.E.
Dipropylene glycol monomethyl ether acetate	88917-22-0	NE <sup>1</sup>	NE
Titanium Dioxide	13463-67-7	15mg/m <sup>3</sup> (Dust)	10mmg/m <sup>3</sup>
Red Iron Oxide	1332-37-2	10mg/m <sup>3</sup>	5mg/m <sup>3</sup>
Yellow Iron Oxide	51274-00-1	NE	NE
Carbon Black	1333-86-4	3.5mg/m <sup>3</sup> (dust)	3.5mg/m <sup>3</sup> (dust)
Dimethyl Ester	Proprietary	N.E.	N.E.

<sup>1</sup>None Established

<sup>2</sup>The manufacturer of the component states that they will provide additional information to a health professional in the event of a medical emergency.

T.S.C.A. Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N.E.	Specific Gravity (H2O = 1)	0.8-0.9
Vapor Pressure (mm Hg)	N.E.	Melting Point	N/A
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A

Volatile Organic Compounds = 60g/l

Solubility in Water Minimal, Reacts slowly with water

Appearance and Odor Pale yellow colored liquid. Amine odor.

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	171°F	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media Dry chemicals, carbon dioxide, foam, water spray.

Special Firefighting Procedures

Firefighters should wear full emergency equipment with self-contained breathing apparatus. Irritating gases may be generated by fire.

Cool exposed containers with cold water spray to prevent pressure buildup that may rupture the containers.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Keep container closed when not in use, protect from moisture.
Incompatibility (Materials to Avoid)		Strong oxidizers, alkaline materials and acids. Avoid moisture prior to use	
Hazardous Decomposition or Byproducts		By Fire- carbon monoxide, carbon dioxide, aldehydes, nitrogen.	
Hazardous Polymerization	May Occur		Conditions to Avoid Decomposition products from hydrolysis in water isophorone diamine and isobutylaldehyde
	Will Not Occur	X	

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	YES	YES	YES

Signs and Symptoms of Exposure Irritation on skin.

Health Hazards (Acute and Chronic) Note: Persons with lung disorders or who are sensitized should not use this product.

ACUTE - Irritation on skin and dermatitis. Corrosive

CHRONIC - Repeated overexposure will cause severe skin irritation, dermatitis and sensitization.

Sensitized persons may experience rapid irritation of skin upon exposure.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Medical Conditions Generally Aggravated by Exposure  
Allergy, skin disorders.

Emergency and First Aid Procedures

EYES - **CORROSIVE**: Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

SKIN - **CORROSIVE**; PROMPTLY wash with soap and water. DO NOT wash with solvents. Seek medical advice if irritation develops or persists.

INHALATION - Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.

INGESTION - Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

## SECTION VII - CONTROL MEASURES

Respiratory Protection (Specify Type)

Provide adequate exhaust ventilation; use a NIOSH - approved respirator if PELS/TLVS are exceeded.

Ventilation	Local Exhaust	If needed.	Special	None known.
	Mechanical	Adequate exhaust ventilation must exhaust AWAY from applicator.		

Protective Gloves	Natural or Neoprene gloves.	Eye Protection	Splash goggles or face shield.
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Other Protective Clothing or Equipment

Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Protective skin creams help cleaning with soap and water, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at work area.

Work/Hygienic Practices Enforce careful handling to prevent splashing. Wash thoroughly after use.

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material is Released or Spilled

Wear protective equipment to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

Waste Disposal Method

Dispose in accordance with Federal, State, and Local requirements.

Precautions to be Taken in Handling and Storing

Keep containers tightly closed when not in use.

Other Precautions NONE KNOWN.

Prepared by Samet Dy - Urethane Chemist

**PLEASE NOTE** "The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."



**DUR-A-FLEX**  
INNOVATION FROM THE FLOOR UP

95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 1/3/2011

<b>SECTION I - IDENTIFICATION</b>	<b>HAZARD RATING</b> 0 = Least 1 = Slight 2 = Moderate 3 = High 4 = Extreme	Health	2
		Flammability	2
		Reactivity	1
		Personal Protection	G
<b>IDENTITY (As Used on Label)</b>	<b>Armor-Stat ESD Topcoat Hardener</b>		
<b>COMMON NAME</b>	Aliphatic Polyisocyanate Resin Solution		

<b>SECTION II - PRODUCT COMPONENTS</b>	<b>CAS.#</b>	<b>OSHA PEL</b>	<b>ACGIH TLV</b>
Homopolymer of HDI	28182-81-2	N.E. <sup>1</sup>	N.E.
Hexamethylene Diisocyanate (HDI) <sup>2</sup>	822-06-0	N.E.	0.005ppm
Dimethyl Ester	Proprietary	N.E.	N.E.
Methyl-1,3-dioxolan-2-one	108-32-7	N.E.	N.E.

<sup>1</sup>not established

<sup>2</sup>Residual monomer content is less than 0.5% based on resin solids at the time of manufacture

T.S.C.A. Status - O.K. on all above components.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	DPMA	392°F	Specific Gravity (H <sub>2</sub> O = 1)	1.11
Vapor Pressure (mm Hg)	HDI	4.7 x 10 <sup>-7</sup>	Melting Point	N/A
Vapor Density (AIR = 1)	DPMA	6.6	Evaporation rate (Butyl Acetate = 1)	0.015
Volatile Organic Compounds (VOC) = Nil				
Solubility in Water	NOT SOLUBLE.			
Appearance and Odor	Clear, mild ester-like odor.			

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	110°F	Flammable Limits	LEL	UEL
			4.22%	12.87%

Extinguishing Media Dry Chemicals, CO<sub>2</sub>, Universal Type Foam.

Special Firefighting Procedures

Wear full protective equipment including self-contained breathing apparatus. During a fire, HDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Closed container may explode when exposed to extreme heat or burst when contaminated with water (CO<sub>2</sub> evolved).

Unusual Fire and Explosion Hazards

Spills of this on hot fibrous insulations may lead to lowering of the autoignition temperatures resulting in possible spontaneous combustion

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	Keep containers closed when not in use. Avoid static discharge. Flammable vapors released at elevated temps.
Incompatibility (Materials to Avoid)		Avoid oxidizers and phosphorus-containing materials.	
Hazardous Decomposition or Byproducts		Fire may yield carbon monoxide and/or carbon dioxide.	
Hazardous Polymerization	May Occur	X	Conditions to Avoid
	Will Not Occur		Contact with moisture or other materials which react with isocyanates or temperatures above 400F.

## SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes	YES	Yes

Signs and Symptoms of Exposure Irritation and redness of skin and eyes. Breathing difficult

### Health Hazards (Acute and Chronic)

ACUTE - prolonged skin exposure can cause irritation, dermatitis. Inhalation of vapors can cause nasal and respiratory irritation, dizziness, headache, nausea.

CHRONIC - prolonged or repeated exposure to vapors may cause lung damage as well as increased sensitivity.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

### Medical Conditions Generally Aggravated by Exposure

Asthma and other respiratory disorders(bronchitis, emphysema, hyperreactivity), skin allergies, eczema.

### Emergency and First Aid Procedures

EYES - Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

Skin - remove contaminate clothing. Clean affected area with mild soap and water. If irritation or redness develops, seek medical attention.

INHALATION- move person away from source of exposure and into fresh air. If person is not breathing, give artificial respiration and seek medical attention immediately. If breathing difficulty develops, give oxygen and seek medical attention immediately.

**\*\*NOTE\*\* PERSONS WITH LUNG DISORDERS OR WHO ARE SENSITIZED SHOULD NOT USE THIS PRODUCT.**

## SECTION VII - CONTROL MEASURES

### Respiratory Protection (Specify Type)

Use NIOSH approved respirator as outlined in 30CFR11 and 29CFR 1910.134

effective for solvent and diisocyanate vapors. Use SCBA or air-supplied respirators when TLV/PEL is exceeded.

Ventilation	Local Exhaust	Use in confined areas.	Special	Explosion proof fans when needed.
	Mechanical	Must be sufficient to maintain area below established TLV/PEL.		

Protective Gloves	Neoprene rubber gloves.	Eye Protection	Splash proof goggles.
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### Other Protective Clothing or Equipment

Use other protective equipment such as rubber aprons and a face shield if danger of splashing is possible.

Eye wash station or clear water must be readily available. ENFORCE GOOD HYGIENE PRACTICES. No smoking or open lights in work area. Exposure to liquid, vapors, mists or fumes must be minimized. Use air supplied respirators in enclosed areas and when PEL/TLV is higher than established level.

Work/Hygienic Practices Launder contaminated clothing before use. Dispose contaminated leather shoes

## SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE

### Steps to be Taken in Case Material is Released or Spilled

Shut off and eliminate all ignition sources. Keep people away. Add sand, earth or other absorbent to spill area. Ventilate confined spaces. Open windows and doors, minimize breathing vapors and skin contact. Keep spill out of sewers by diking. Observe precautions for volatile, flammable vapors from absorbed material.

### Waste Disposal Method

Incineration in accordance with local, state, and federal regulations.

Precautions to be Taken in Handling and Storing Keep containers tightly closed when not in use and away from excessive heat and flame. DO NOT pressurize, cut, weld, solder, drill or grind the containers.

Other Precautions Store in an OSHA approved area for flammable materials.

Prepared by Samet Dy - Urethane Chemist

**PLEASE NOTE** "The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular use."



**DUR-A-FLEX**  
INNOVATION FROM THE FLOOR UP

95 Goodwin Street, East Hartford, CT., 06108 (860) 528-9838

# Material Safety Data Sheet

Date Prepared 1/3/2011

## SECTION I - IDENTIFICATION

IDENTITY (As Used on Label) **Armor-Stat ESD Topcoat Grit**

COMMON NAME **WHITE ALUMINUM OXIDE**

**HAZARD RATING**

0 = Least  
1 = Slight  
2 = Moderate  
3 = High  
4 = Extreme

Health	0
Flammability	0
Reactivity	0
Personal Protection	G

## SECTION II - PRODUCT COMPONENTS

	CAS.#	OSHA PEL	ACGIH TLV
Aluminum Oxide	1344-28-1	5 mg/m <sup>3</sup> (resp)	10 mg/m <sup>3</sup>

Other Oxides (Total) (SiO<sub>2</sub>+Fe<sub>2</sub>O<sub>3</sub>+Na<sub>2</sub>O+MgO+TiO<sub>2</sub>)=1%

T.S.C.A. Status - O.K. on above component.

**\*FOR SPILL, LEAK, FIRE, OR ACCIDENT, CALL CHEMTREC 24-HOUR EMERGENCY NUMBER 1-800-424-9300\***

## SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A	Specific Gravity (H <sub>2</sub> O = 1)	3.95
Vapor Pressure (mm Hg)	N/A	Melting Point	2070
Vapor Density (AIR = 1)	N/A	Evaporation rate (Butyl Acetate = 1)	N/A

Volatile Organic Compounds (VOC) = Nil

Solubility in Water **INSOLUBLE**

Appearance and Odor **Granular, White, Odorless**

## SECTION IV - FIRE and EXPLOSION HAZARD DATA

Flash Point (Closed Cup Method)	N/A	Flammable Limits	LEL	UEL
			N/A	N/A

Extinguishing Media **N/A**

Special Firefighting Procedures

None Known.

Unusual Fire and Explosion Hazards

None Known.

## SECTION V - REACTIVITY DATA

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid) **None known.**

Hazardous Decomposition or Byproducts **None Known.**

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

**SECTION VI - HEALTH HAZARD DATA**

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	Yes		Eyes

Signs and Symptoms of Exposure	Temporary Inhalation Discomfort.
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Health Hazards (Acute and Chronic)

ACUTE - None known other than possible temporary discomfort due to inhalation of dust concentration.

CHRONIC - Potential chronic respiratory distress/irritation. Can aggravate pre-existing lung conditions.

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	NO	NO	NO

Medical Conditions Generally Aggravated by Exposure	None Known.
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Emergency and First Aid Procedures

EYES - hold eyes apart and flush with clean water for 15 minutes. If irritation or redness develops and persists seek medical attention.

INHALATION - For inhalation discomfort move person to fresh air.

**SECTION VII - CONTROL MEASURES**

Respiratory Protection (Specify Type)

Provide adequate exhaust ventilation; use a NIOSH - approved respirator if PELs/TLVs are exceeded.

Ventilation	Local Exhaust	If necessary.	Special	None Known
	Mechanical	Adequate for dusty environments		

Protective Gloves	Wear gloves	Eye Protection	Safety goggles, do not wear contact lenses.
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Other Protective Clothing or Equipment

NONE KNOWN.

Work/Hygienic Practices Avoid unnecessary formation of dust.

**SECTION VIII - PRECAUTIONS FOR SAFE HANDLING AND USE**

Steps to be Taken in Case Material is Released or Spilled

Non - Skid Grit may be swept or vacuumed for normal disposal.

Waste Disposal Method

Non - Skid Grit is not a hazardous waste under U.S. Federal RCRA regulations.

Precautions to be Taken in Handling and Storing

Same as given in Section VII (ventilation, gloves, and goggles.)

Other Precautions Dry powders can build static charges when subjected to friction.

Prepared by Samet Dy - Urethane Chemist

**PLEASE  
NOTE**

"The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, Dur-A-Flex, Inc. MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND use."

DUR-A-FLEX, INC. has developed this document to help Facility Owners, Architects, Engineers, Specification Writers, and Contractors gain a better understanding of the importance of a properly prepared substrate, and the methods to achieve an appropriate bond. This document is intended to be a general guideline, for specific jobsite information, please contact your local DUR-A-FLEX Representative.

There are many satisfactory methods of preparing a substrate to receive a DUR-A-FLEX flooring system. The preparation method is typically chosen based on service requirements, time allowed for entire process and accessibility.

### **PERSONAL PROTECTION EQUIPMENT**

It is the responsibility of the surface preparation contractor and the flooring contractor to insure that all personnel are properly protected from hazards. DUR-A-FLEX is committed to promoting awareness regarding these potential hazards. All DUR-A-FLEX products are rated according to the Hazardous Material Identification System (HMIS). OSHA regulations specify when, where and how workers are to be protected. These regulations and the local OSHA officials should be consulted as necessary to insure proper protection, compliance with the law, and to avoid liability issues. Safety and health issues should be addressed prior to the start the job.

### **TESTING**

#### **MOISTURE CONCERNS**

Please refer to the [Floor Evaluation Flow Chart](#) in the Contractor's Center of our website for a step-by-step process to determine the condition of the concrete.

#### **Testing For An Existing Sealer**

Test to see if the floor is "sealed" by pouring a small amount of muriatic acid on the floor in several spots. If it "froths" instantly, the floor is not sealed. If the acid doesn't froth immediately, a sealer and/or paint is present and must be removed by scarifying, steel shot blasting or other mechanical methods.

#### **Salt Contamination Testing**

Salt contaminated slabs that contain steel reinforcement are very susceptible to corrosion of the reinforcing steel. As the steel corrodes it expands causing cracking, delamination of

concrete and any toppings bonded to it, and eventually, structural failure of the slab. Obvious signs of chloride or salt contamination are spalled concrete with exposed, rusted reinforcing steel. Testing is recommended to determine the depth of contamination and the extent of corrosion activity. A Litmus Test for pH will determine the presence of chloride or acid contamination, if the pH is below 10.

#### **Bond Test**

The purpose of the bond test is to make sure preparation method is adequate for the primer to bond to the substrate. The test is done only when applying MMA systems. For more information on bond test refer to CRYL-A-PRIME data sheet on our website @ [www.dur-a-flex.com](http://www.dur-a-flex.com).

### **REMOVAL AND REPAIR**

#### **ASTM D 4258-83 Standard practice for surface cleaning concrete for coating.**

This practice includes surface cleaning of concrete to remove grease, dirt, and loose material prior to the application of coatings. Procedures include vacuum cleaning, air blast cleaning, water cleaning, detergent water cleaning, and steam cleaning.

#### **Removal of bond inhibiting contaminants**

This includes, but is not limited to removal of oils, grease, wax, sealers, curing compounds, laitance, salts and any other hydrocarbon based materials. This will ensure that a good bond takes place between the resinous flooring and the concrete substrate.

#### **Removal of Adhesives, Mastics and Membranes**

In many retrofit projects, existing tile, VCT or sheet goods are being replaced with polymer flooring systems. Removal of the floor finish will often leave a layer of some type of mastic, adhesive or membrane. In thin applications these materials can often be totally cleaned up by

shotblasting the concrete. In thicker applications, the steel shot will tend to bounce, requiring additional preparation with the use of scarifying equipment or possibly even the use of chemical strippers. Wherever possible, consult the DUR-A-FLEX Tech Service Department or your local DUR-A-FLEX Flooring Contractor and schedule a site visit to investigate the best removal methods.

**Removal of Existing Seamless Floor**

Like mastics and adhesives, the need to remove an existing seamless floor will occasionally arise. There has been much progress made in the development of equipment for removal of resurfacers. Typically, removal requires a heavy grinder with “rotating heads”. These heads can be outfitted with different “teeth” or carbide “blades” for removal of a particular type of overlay.

**REASONS FOR SURFACE PREPARATION**

Surface preparation of a concrete substrate is required to remove surface laitance to create a surface profile and porosity for adhesion of polymer floor systems.

**METHODS OF SURFACE PREPARATION**

Care should be taken to define the degree of abrasion required for the coating system so that the concrete will not be eroded beyond what is necessary. All concrete surfaces should be abraded to remove laitance and contaminants. The following Table describes the required profiles according to the ICRI guidelines for various coating systems.

Coating	Coating Thickness	Concrete Surface Profile (CSP)
Sealers	3 mil	CSP 2-3
High-Build	10-40 mil	CSP 3-4
Self-Leveling	50 mils-1/8”	CSP 4-5
Polymer Overlay	1/8-1/4”	CSP 5-7

**Shotblasting**

Shotblasting is the recommended method of surface preparation of concrete for most polymer floor installations. Shotblast equipment utilizes an alloy wheel spinning at high speeds to throw small steel particles at the substrate in a controlled, dry, 99% dust-free operation. This process removes surface contamination, adds profile and vacuums the concrete clean in one

process. The size and angularity of shot, along with the travel speed of the unit, can be adjusted to determine the degree of the surface profile. Because shotblasting is a dry preparation process, it allows the installation to begin immediately after completion of prep (surface must be dry before blasting). Shotblasting will also identify weak areas in the surface of the concrete. **NOTE:** When selecting shotblast preparation for thin film coating systems (under 20 mils) be aware that a blast pattern or track lines may be visible.

**Diamond Grinding**

Diamond grinding should only be used in areas inaccessible to shotblasting and then only with coarse diamond wheel.

**Scarifying**

Scarifying is primarily used for the removal of deteriorated concrete, coatings and polymer flooring systems.

**Hand Tool**

Hand tool preparation consists of the use of mechanical tools and equipment designed to abrade or chip away the surface of the concrete. Common tools available include chipping hammers, hand held diamond grinders and concrete crack chasing saws. These tools are typically used to make keyways, prepare edges against walls and columns.

**TYPES OF SUBSTRATES**

**Regular Concrete**

Regular concrete surface must be prepared with a steel shot-blast machine, scarifier, diamond grinder. Floors with oil, grime and grease should first be cleaned with Simoniz 969 Cleaner/Degreaser before preparing. Allow floor to dry. Good ventilation, fans and/or auxiliary heat will accelerate drying time. Do not use oil fired portable heaters.

**Replacement of Structurally Deteriorated Concrete**

Replacement of structurally deteriorated concrete must be done in accordance with The International Concrete Repair Institute (ICRI) Bulletin. Patching material must be a DUR-A-FLEX approved patching material. Make sure of minimum cure time before installation of resinous flooring. DUR-A-FLEX flooring Contractors should be contracted whenever possible to complete these repairs appropriately.

### **Fiber Filled Concrete**

Fiber filled concrete must be burned with a propane weed burner, swept and vacuumed perfectly clean and then primed. When primer has completely cured, the floor must be sanded and tack ragged (This step may not be necessary for thick resurfacing systems).

### **Quarry/Ceramic Tile**

Quarry/Ceramic tile have been successfully resurfaced on many projects without removal of tile and setting bed. A site investigation along with cores through the entire slab will help identify the type of setting bed, the existence of any waterproofing membranes, additional toppings, or other unusual existing conditions. Water trapped within the floor will create long-term sanitation and performance problems.

If the tile is well bonded and placed over an unsaturated latex setting bed, the floor may be resurfaced as follows: Surface must be mechanically abraded with a steel shot-blast machine, scarifier or diamond grinder and vacuumed perfectly clean. "Tack rag" area to remove dust and to soften surface. Apply DUR-A-FLEX recommended Poly-Crete or Hybri-Flex systems or DUR-A-GLAZE TIECOAT or CRYL-A-PRIME P-101 with CRYL-A-BOND MT primer to the entire area immediately and allowed to cure.

### **Existing Epoxy Coating/Resurfacer**

Existing seamless floors may be resealed or resurfaced from time to time due to excessive wear or the need to change the appearance or skid-resistance of the floor. The existing floor should first be cleaned and degreased with EZ-CLEAN floor cleaner/degreaser. It must then be mechanically abraded with a floor-sanding machine or a steel shot blast machine to totally remove gloss. Vacuum perfectly clean. "Tack rag" area to remove dust and to soften surface. Apply DUR-A-GLAZE TIE-COAT to entire area immediately followed by subsequent epoxy coatings.

### **Plywood**

The plywood substrate must be sound and non-flexing under the expected load. Typical plywood substrate must be exterior or marine grade, new, clean, and smooth finish (NO KNOTS.). Two layers with staggered joints are required. Plywood should be positively fastened to the existing surface with a high quality construction adhesive as well as a 6" screw pattern.

For further information on plywood substrates, please contact your local sales representative or DUR-A-FLEX technical department.

### **Walls**

#### **For Dur-A-Wall Applications:**

Block wall: Apply Dulux (ICI) block filler to fill pores over new or existing concrete block following manufacturer's instructions.

Drywall: Drywall must be finished to a level #4 or #5 finish prior to coating. Prime with ICI GRIPPER Multipurpose primer or GLIDDEN GRIPPER primer. Substrate will affect final appearance of wall coating.

Cast in place Concrete and Ceramic Tile:  
Use DUR-A-GLAZE 4 RESIN COVE-REZ thickened with Cab-O-Sil, M5, or No-Sag #2 (1.5 times the resin volume) with DUR-A-GLAZE 4 FAST Hardener to fill pores and cracks.

**Multiple applications of filler material maybe necessary. Sand or grind between coats to achieve a smooth surface.**

**NOTE: Tile and block grout lines may "mirror through" the finished system even though the surface is smooth.**

### **CRACKS AND JOINTS**

Refer to Joint Guidelines for complete details on our website in the Contractor Center section @ [www.dur-a-flex.com](http://www.dur-a-flex.com).

1/2010SURFACEPREP

***Before using any DUR-A-FLEX, Inc. Product, be sure the Material Safety Data Sheet is read and understood.***

Flooring problems on concrete from vapor emission, dew point, alkalinity; pH, etc. cause millions of dollars in repair and replacement costs annually. By recognizing potential problems, testing for and mitigating them, steps can be taken to ensure a long lasting, successful flooring installation.

### **What is the traditional failure mode because of “moisture” problems?**

There are two ways a polymeric floor can fail: (1) the floor system was never able to bond properly at the time of installation or (2) there were factors present at the time of installation to cause the bond to fail. Symptoms of failure on an already installed floor may include bubbles, blisters and/or delamination.

### **What causes a polymeric floor to fail?**

Traditional theory has focused primarily on moisture failure such as capillary and hydrostatic, however more recent research has found that although moisture plays a role, it is not the only factor. In reality, the presence of ionic compounds in the concrete plays an even more significant role. For this reason we strongly recommend that you **do not rely on moisture testing alone to avoid floor failure!**

Through the chemical analysis of several thousand concrete cores we have developed a patent-pending process that can actually predict future moisture blister generation on concrete.

During the evaluation of these cores, we learned some slabs with moisture vapor emission rates of 25 lbs./1000 s.f./24 hours by calcium chloride as well as 95+% RH did not blister. Conversely, we saw slabs with much lower emission rates blister severely. We also understand that many slab owners are paying to install “moisture mitigation systems” to insure the flooring installed on top won’t blister; yet in some cases, **blisters still occur!**

We also learned that specific ionic components of the surface chemistry of the slab (top 0-3/16”(5mm)), when present at certain levels, would predict moisture blisters **100% of the time.** Without this combination of compounds, regardless of the moisture levels, blisters wouldn’t occur.

### **What is the main factor that will cause a failure?**

Osmosis is one of the main factors that can cause floor failure. Osmosis occurs when actual moisture vapor emission through the concrete slab is seeking to equalize the soluble ions at the surface of the concrete slab. This creates a pressure that can be greater than the adhesion strength of the coating. Four conditions are needed for osmosis to occur: (1) a semi-permeable membrane, which

can be the polymer primer or the upper layers of the slab, (2) a gradient of ionic activity (soluble salts), (3) a source of moisture vapor and (4) An impermeable prime, base and/or topcoat. If any one of these is removed, osmotic blistering cannot occur. And we aren’t talking all theory here. We can make blisters happen on command!

### **What is Moisture Vapor Emission?**

Water is added to turn cement, sand and aggregate into a concrete slab. There is a critical volume of water needed to “hydrate” the concrete, and an excess volume of water used to make the concrete pour-able and workable. Moisture Vapor Emission is movement of moisture that is not part of the concrete mix. It could be from ground water, plumbing, or landscaping runoff, etc. This moisture is a concern when the concrete slab has no vapor retarder installed, or the vapor retarder has been punctured.

### **How were moisture failures predicted?**

Up until recently, there were three methods recommended to pre-test for moisture related floor failures; the plastic sheet method, Calcium Chloride using ASTM F1869, and Relative Humidity using ASTM F2170.

### **How will moisture failures be predicted by Dur-a-Flex?**

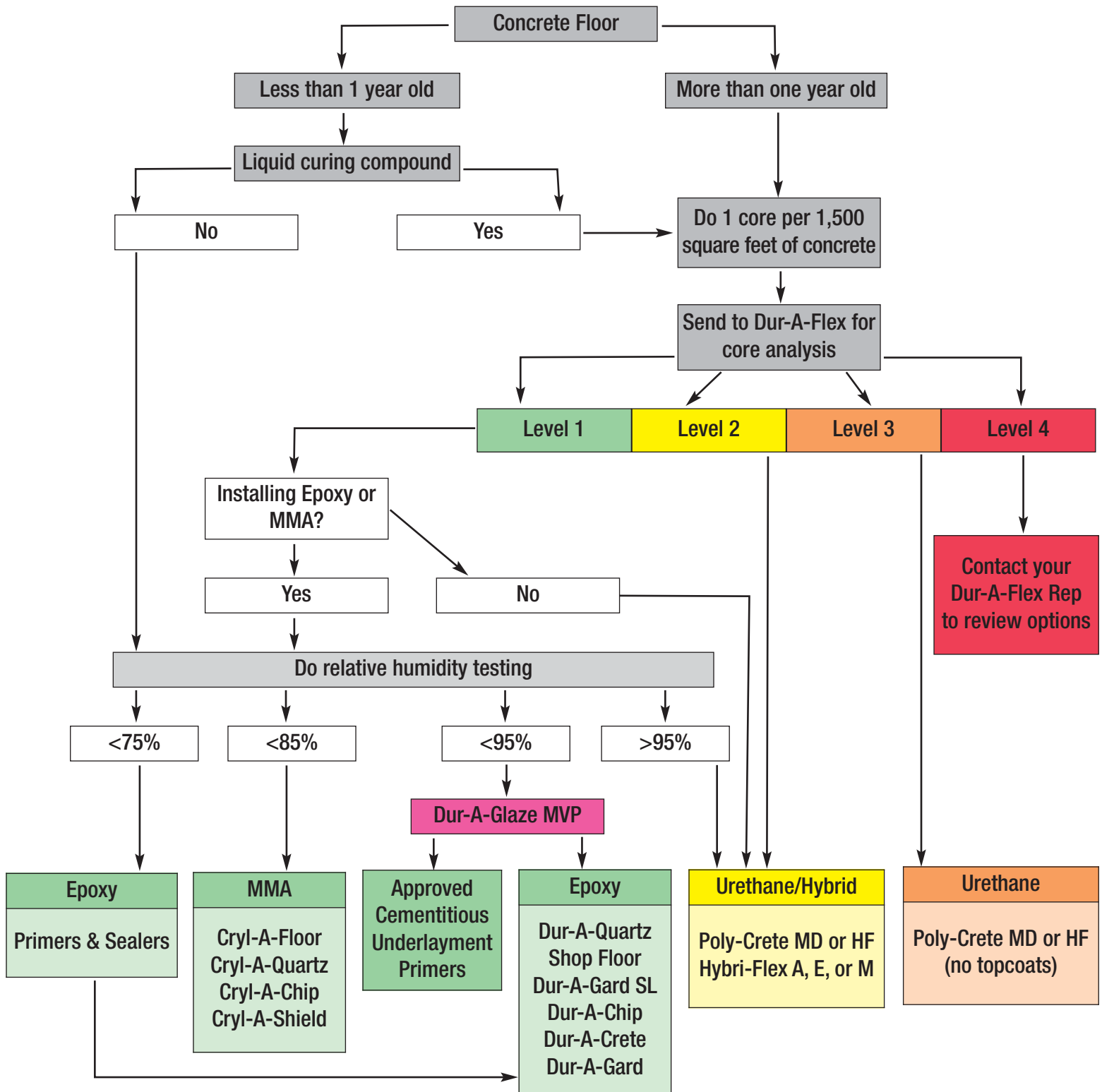
Dur-A-Flex has developed a flow chart to assist you in determining what floor system will work best based on the test results of core samples and, where appropriate, relative humidity testing. (See flow chart on following page) If you are planning to use our Epoxy or MMA, use in-situ Relative Humidity Testing per ASTM F-2170-02 as a quantitative test method.

Unlike traditional calcium chloride testing, RH as well as core test results are not significantly impacted by ambient temperature and relative humidity conditions in the building.

### **What determines my flooring options?**

Depending on the level of ionic compounds in your core samples, your floor will fall into one of four levels. Your test report will specify this level allowing you to select the best floor option as shown on the flow chart.

# Floor Evaluation Flow Chart



## Dur-A-Flex Chemical Resistance Data

R = Recommended (no change)

S = Splash &amp; spill (slight change)

N = Not recommended (attack)

 \***Bold**\* = Stains

Chemical Name	% Conc.	Epoxies					Urethanes							Acrylics
		Dur-A-Gard	Glaze #4	Nov - olac	Ultra Clear	Armor Top	Glaze #5	Poly-Thane 1	Poly-Thane 2 HS	Poly-Crete HF MD TF	Poly-Crete CF	Poly-Crete KT	MMA	
Acetic Acid	10%	R	R	R	R	R		R	R	R	R	R	R	R
Acetic Acid	30%	S	S	S	R	R		S	R	S	R		R	S
Acetic Acid	50%	N	N	N	R	N		S	R	S	S		S	N
Acetic Acid,3%, and Propionic Acid		R	R	R	R				R	R	R		R	R
Acetone		N	N	N	N		R	S	R	R		R		N
Acid Clean		S	S	S	R				S	S				
ACP-99 Ketone		N	N	N	S				R	R				N
Alum	48%	N	N	N	R				S	S	S		S	R
<b>*Aminoethanolamine*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>	<b>*R*</b>	R		R	<b>*R*</b>
Ammonia	30%	R	R	R	R	R	R		R	R	R	R	R	R
Ammonium Hydroxide	30%	R	R	R	R		R	R	R	R	R	R	R	S
Antifreeze		R	R	R	R	R	R	R	R	R	R	R	R	R
Aromatic 100		S	S	S	R				R	R	S		S	
Aromatic hydrocarbons-Super Hiflash 100		S	S	S	R				R	R	S		S	
Benzene		N	N	N	S				R	R	N		N	N
Benzyl Alcohol	Photo	S	S	S	R				R	R	S	S	S	N
<b>Betadine</b>			<b>*S*</b>			<b>*S*</b>	<b>*R*</b>	<b>*S*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>
Boric Acid	4%	R	R	R	R				R	R	R		R	R
Brake Fluid, DOT 3		S	S	S	S	S	R		R	R	S		S	R
Butanol/Methyl Cellosolve		N	N	N	S				R	R	N		N	N
Butyl Alcohol		S	S	S	R				R	R	S		S	N
Butyl Carbitol		S	S	S	R				R	R				N
Butyl Cellosolve		N	N	N	S				R	R				N
Butyl Cellosolve acetate		N	N	N	S				R	R				N
Carbon Tetrachloride		R	R	R	R				R	R				N
Caustic Soda solution		R	R	R	R				R	R	R	R	R	R
<b>*Chromic Acid*</b>	10%	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*S*</b>	<b>*R*</b>	<b>*S*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>
<b>*Chromic Acid*</b>	40%	<b>*N*</b>	<b>*N*</b>	<b>*N*</b>	<b>*R*</b>			<b>*S*</b>	<b>*S*</b>	<b>*S*</b>	<b>*S*</b>		<b>*S*</b>	<b>*S*</b>
<b>CIP 200 Cleaner</b>		<b>*N*</b>							R					
Citric Acid	10%	R	R	R	R		R	R	R	R	R	R	R	R
Citric Acid	20%	R	R	R	R				R	R	R	R	R	R
Citric Acid	50%	N	N	N	R			S	R	R	R		R	R
Clorox		R	R	R	R		R	S	R	R	R	R	R	R
Coffee						<b>*S*</b>	<b>*R*</b>							
<b>*Cola*</b>	90C	<b>*N*</b>	<b>*N*</b>	<b>*N*</b>	<b>*N*</b>			<b>*R*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>
Cola	RT	S	S	S	R	S	R	R	R	R	R		R	R
<b>*Copper Sulfate*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>	<b>*R*</b>	<b>*R*</b>		<b>*R*</b>	<b>*R*</b>
<b>*Cupric Chloride*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>	<b>*R*</b>	<b>*R*</b>		<b>*R*</b>	<b>*R*</b>
Cyclohexanone		S	S	S	R				R	R	S		S	R
Detergent, heavy duty		R	R	R	R	R	R		R	R	R	R	R	R
Diacetone alcohol		N	N	N	S				R	R				N
<b>*Dimethyl ethanol amine*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>	<b>*R*</b>				
<b>*Dimethylamineborane*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>				<b>*R*</b>	<b>*R*</b>				
DMF		N	N	N	N				R	R	N		N	
Docosanic Acid (in ethanol)	2.50%	N	N	N	R				R	R	N		N	
Drano- (sodium hydroxide and aluminum)		S	S	S	R	S	R		R	R	R	R	R	
<b>DuraPrep</b>			<b>*S*</b>			<b>*S*</b>	<b>*S*</b>	<b>*S*</b>	<b>*R*</b>	<b>*S*</b>				<b>*S*</b>
<b>Eco-lab AC-3 Cleaner</b>		<b>*N*</b>				<b>N</b>	<b>*S*</b>			<b>*S*</b>		<b>N</b>		
Eco-Lab Wash & Walk		R			R		R				R	R	R	
EEP solvent		N	N	N	S	N	R		R	R	N	S	N	N
Ethanol	95%	N	N	N	S		R	S	R	R	S		S	S
Ethyl Acetate	99%	N	N	N	S				R	R	S	S	S	S
Excellerate Cleaner						R	R					R		
Fluoboric Acid		S	S	S	R				R	R				
<b>*Formaldehyde*</b>	37%	<b>*S*</b>	<b>*S*</b>	<b>*S*</b>	<b>*R*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>
Gasoline		R	R	R	R		R	R	R	R		R		R
Glycol Ether		N	N	N	S				R	R		R		R
Heating Oil-Home		R	R	R	R			R	R	R	R		R	R
Hexane		N	N	N	S				R	R	R		R	R
Hydraulic fluids		R	R	R	R			R	R	R	R	R	R	R
<b>*Hydrochloric Acid*</b>	20%	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>			<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>
<b>*Hydrochloric Acid*</b>	37%	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>		<b>*R*</b>	<b>*S*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>		<b>*R*</b>	<b>*R*</b>
<b>*Hydrofluoric Acid*</b>	40%	<b>*N*</b>	<b>*N*</b>	<b>*N*</b>	<b>*S*</b>				<b>*R*</b>	<b>*S*</b>		<b>*R*</b>		<b>*R*</b>
Hydrofluosilic Acid	30%	R	R	R	R				R	R				R
Hydrogen Peroxide	30%	S	S	S	R		R	S	R	R	R	R	R	R
Hydrogen Peroxide	50%	N	N	N	R	S	S	N	R	R	R	R	R	R
<b>*Iodine Tincture*</b>	2%	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>	<b>*R*</b>		<b>*R*</b>		<b>*R*</b>	<b>*R*</b>	<b>*R*</b>		<b>*R*</b>	<b>*R*</b>
Isopropanol		S	S	S	R		R	R	R	R	S		S	S
Isopropyl Acetate	99%	S	S	S	R				R	R	S		S	N
Jet Fuel		R	R	R	R		R	R	R	R	R		R	R
Lactic Acid	88%	N	N	N	R	N	N	S	S	N	R	S	R	R
Magnesium Hydroxide		R	R	R	R				R	R	R		R	R
MEK		N	N	N	N			S	S	S	N	S	N	N
Methacrylate Monomer		S	S	S	S			N	S	S	N	N	N	N

# Dur-A-Flex Chemical Resistance Data

R = Recommended (no change)

S = Splash & spill (slight change)

N = Not recommended (attack)

\*Bold\* = Stains

Chemical Name	% Conc.	Epoxies					Urethanes							Acrylics
		Dur-A-Gard	Glaze #4	KF	Nov - olac	Ultra Clear	Armor Top	Glaze #5	Poly-Thane 1	Poly-Thane 2	Poly-Crete HF MD TF	Poly-Crete CF	Poly-Crete KT	MMA
Methanol		N	N	N	N			R	R	N	S	N	N	
Methyl Cellosolve		N	N	N	N			R	R		S		N	
Methyl dipropasol solvent		N	N	N	R			R	R		S		N	
Methylene chloride		N	N	N	N			S	N	N	S	N	N	
MIBK		N	N	N	S		R	R	R	N		N	N	
Mineral Oil		R	R	R	R		R	R	R	R		R	R	
Mineral Spirits		S	S	S	R		R	R	R		R		R	
Mixed Chlorinated Waste Solvents		N	N	N	S			R	R				N	
*Monoethanolamine*		*R*	*R*	*R*	*R*			*R*	*R*					
Motor Oil		R	R	R	R		R	R	R	R		R	R	
Mustard, yellow							*R*							
*Nickel chloride*		*R*	*R*	*R*	*R*			*R*	*R*				*R*	
*Nickel Sulfate*		*R*	*R*	*R*	*R*			*R*	*R*				*R*	
*Nitric Acid*	10%	*S*	*S*	*S*	*R*		*R*	*S*	*R*	*S*			*R*	
*Nitric Acid*	20%	*S*	*S*	*S*	*R*		*S*	*N*	*R*	*R*	*R*	*R*	*R*	
*Nitric Acid*	30%	*N*	*N*	*N*	*R*			*N*	*R*	*R*	*R*	*R*	*S*	
*Nitric Acid*	40%	*N*	*N*	*N*	*R*			*N*	*S*	*S*	*R*	*S*	*N*	
Oleic Acid		R	R	R	R			R	R				R	
Oxalic Acid	10%	R	R	R	R			R	R				R	
Peppermint Oil	100%	R	R	R	R			R	R	R				
Phenolic Paint stripper waste	1-5%	S	S	S	R			R	R				N	
Phosphoric Acid	85%	*R*	*R*	*R*	*R*		*S*	*R*	*R*	*R*	*R*	*R*	*S*	
Phosphorous Trichloride	100%	N	N	N	S			R	R				N	
PM Solvent		N	N	N	S		R	S	R	R		S	N	
Polyester Resin		S	S	S	R			R	R				S	
Polyester resin in styrene		S	S	S	R			R	R				N	
Polyphosphates		R	R	R	R			R	R	R		R	R	
*Potassium Cyanide*		*R*	*R*	*R*	*R*			*R*	*R*				*R*	
Potassium Hydroxide	45%	R	R	R	R	R		*S*	R	R	R	R	R	
*Potassium Permanganate*	solid	*R*	*R*	*R*	*R*			*S*	*R*	*R*	*R*	*R*	*R*	
Propionic Acid	100%	S	S	S	R			R	R					
Propyl Cellosolve		N	N	N	S			N	R	R	N	N		
Propylene Glycol		R	R	R	R		R	R	R	R	R	R	R	
Propylene glycol ether		N	N	N	R		R		R	R	S	S	R	
Red Wine Vinegar						*S*	R					S		
*Silver Cyanide*		*R*	*R*	*R*	*R*				*R*	*R*				
*Silver Nitrate*	20%	*R*	*R*	*R*	*R*				*R*	*R*	*R*		*R*	
Skydrol		S	S	S	R	S	R	S	R	R		R	R	
Sodium Chlorite		R	R	R	R				R	R	R		R	
Sodium Hydroxide	50%	R	R	R	R		R	R	R	R	R	R	R	
Sodium Hypochlorite	15%	R	R	R	R				R	R	R	R	R	
Sodium Hypochlorite	50%	N	N	N	R		R		R	R		R	R	
*Sodium Persulfate*		*R*	*R*	*R*	*R*				*R*	*R*	*R*		*R*	
*Spearment Oil*		*S*	S	S	R				R	R				
Spor-Klenz					*N*			*N*					*N*	
Stoddard solvent		N	N	N	S				R	R	N		N	
Styrene		N	N	N	S				R	R	N		N	
*Sulfuric Acid*	10%	*R*	*R*	*R*	*R*	*R*	*S*	*R*	*R*	*S*	*R*	*R*	*R*	
*Sulfuric Acid*	50%	*N*	*N*	*N*	*R*	N		*S*	*S*	*S*	*R*	*R*	*S*	
*Sulfuric Acid*	75-98%	*N*	*N*	*N*	*R*			*N*	*N*	*N*	*N*	*N*	*N*	
*Tannic Acid*	20%	*R*	*R*	*R*	*R*				*R*	*R*	*R*		*R*	
Tartaric Acid	10%	R	R	R	R				R	R			R	
Terpene Fraction of Spearmint Oil	100%	R	R	R	R				R	R				
Tetrahydrofuran														
Toluol		N	N	N	N				R	R		S		
Transmission Oil		R	R	R	R	S	R		R	R	R	R	R	
Trichloroethane (1,1,1)		S	S	S	R				R	R				
Trichloroethylene		N	N	N	N				R	R	N	S	N	
*Triethanolamine (TEA)*		*S*	*S*	*S*	*R*				R	*S*	R			
*Triethanolpentamine (TEPA)*		*S*	*S*	*S*	*R*				R	*S*				
*Triethanolitetramine (TETA)*		*S*	*S*	*S*	*R*				R	*S*				
Urine		R	R	R	R			R	R	R		R	R	
Vinegar		R	R	R	R			R	R	R	R	R	R	
Water		R	R	R	R			R	R	R	R	R	R	
Wine, cabernet sauvignon						*S*	*R*							
Xylene		S	S	S	R		R	S	R	R	S	S	N	

All data is based on room temperature exposure. Please check with the Dur-A-Flex Technical Department for elevated constant temperature or thermal shock exposure  
 Methodology - Epoxies and Acrylics (MMA) were tested by immersion for Shore D Hardness and weight change at 0, 2, and 7 days  
 - Urethanes were spot tested and checked after 1, 2, and 7 days

83010

**WHY CLEAN YOUR FLOOR?**

**Appearance:** Your floor will look its best when it is clean. By instituting a scheduled cleaning program, the floor will continue to look and perform as it did when it was first installed.

**Safety:** No matter how aggressive the texture of your floor, if it is not cleaned properly, it can present a slip hazard. Emulsifying, rinsing and drying your floor properly will reduce the risk of a slip and fall incident.

**Service Life:** The lifetime of your floor will depend upon how well you clean it. In aggressive use areas (i.e. kitchens and machine shops) contaminants such as oil, dirt and grease work with water and bacteria to attack your floor.

**FLOOR CLEANING PROCESS & TOOLS**

The best way to clean a Dur-A-Flex floor is to use the recommended cleaning product and follow a six-step process. (Equipment needs vary between small and medium/large floor areas.)

Process	Small Area	Medium/Large Area
<b>Sweep</b> floor thoroughly	Broom, dust mop	Floor sweeper, broom
<b>Apply</b> cleaning product on floor surface	Deck brush, Foamer/sprayer	Automatic floor scrubber, Foamer/sprayer
<b>Dwell</b> – allow cleaning product time to emulsify foreign material	10 –15 minutes	10 –15 minutes
<b>Agitate</b> to aid in the release of foreign materials	Deck brush, Rotary floor machine	Automatic floor scrubber, Rotary floor machine
<b>Remove</b> cleaning product from the floor	Squeegee (soft neoprene) Wet vacuum	Automatic floor scrubber
<b>Rinse</b> the floor with clean water and remove	Wet vacuum, Squeegee (soft neoprene)	Automatic floor scrubber

**NOTES:**

- Never use a mop to clean a floor that is greasy or oily.
- Make sure the pads or brushes on the automatic scrubber are in good shape. Pads should be red or blue 3M cleaning pads or similar. Brushes should be nylon non-abrasive Malish 8129 series or a similar medium flex bristle brush.
- When using a deck brush, choose a medium/stiff bristle.
- When using a rotary floor machine, use a tan or red 3M pad or similar.
- When removing solution with a squeegee, use a soft, neoprene squeegee. **Do Not** use a water spray to remove cleaning solution from the floor because it will over-dilute the solution and cause grease and oil to fall back onto the floor.
- **Wax strippers should never be used on a Dur-A-Flex floor.**
- Spills should be cleaned up immediately to prevent staining and as a safety precaution.
- Surfaces should be adequately protected when moving heavy equipment across the floor.
- Through proper training and education, unnecessary wear of the floor (such as forklift spin and skid-marks) can be avoided.

\*Warranties: Seller warrants that its goods, as described on the face hereof, are free from any defects in material or workmanship. Seller makes no other warranty, express or implied, and all implied warranties of merchantability and fitness for a particular purpose are hereby disclaimed. Seller shall not be liable for prospective profits or special indirect or consequential damages. Seller's sole liability and buyer's exclusive remedy for breach of any warranty as expressly limited, at seller's option, to replacement at the original F.O.B. point or refund of purchase price. Seller shall not be responsible for any claim resulting from failure to utilize product in the manner in which it was intended and in accordance with instruction provided for use of product. Any claim for breach of warranty shall be deemed waived unless buyer shall give seller written notice of such claim within sixty (60) days after delivery and shall allow seller reasonable opportunity to investigate claim and inspect product.\*

## **RECOMMENDED CLEANING PRODUCTS**

Determining the correct cleaning product for your DUR-A-FLEX floor is based upon the amount and type of soiling the floor receives. We have divided these into four types, and recommended a cleaning product for each instance:

<b>Application</b>	<b>Typical Areas</b>	<b>Product</b>	<b>Product Description</b>
Traffic Areas (Light soils)	Retail Hallways, Healthcare, Labs, Dining Areas, Schools	EZ-CLEAN	EZ-CLEAN is a heavy-duty alkaline floor cleaner designed to remove protein or crude based soils.
Moderate/Heavy (Protein soils)	Grocery stores, Restaurant kitchens, Animal care, Food/Beverage Processing	EZ-CLEAN	
Moderate/Heavy (Crude soils)	Manufacturing/Industrial, Machine/Automotive Service Centers, Warehouses	SIMONIZ 969	SIMONIZ 969 is a heavy duty, highly alkaline floor cleaner designed to remove machine and crude oil from concrete
Rubber Tire Marks	Forklift tire spin	TIRE MARK REMOVER	TIRE MARK REMOVER is a heavy duty cleaner designed to remove rubber skid marks from polymer type floors as well as hard steel trowels floors.

The above Dur-A-Flex cleaning products may be ordered directly from Dur-A-Flex Customer Service at 1-800-253-3539 or via email at [orders@dur-a-flex.com](mailto:orders@dur-a-flex.com)

## **WHEN TO CLEAN YOUR FLOOR**

Dur-A-Flex floors are designed for and used in heavy traffic areas that typically accumulate foreign matter. Because of this, the recommended maintenance schedule for most areas is **once or twice daily** cleaning and regular “touch-ups” for spills. Less frequent cleaning of these areas results in a buildup of foreign matter, which diminishes the appearance, safety and service life of the floor.

Our CRYL-A-FLEX MMA products develop to full cure in one hour, and full cure for most epoxy and urethane systems is 7 days at 68°F. The lower the room temperature - the longer the cure time. Avoid chemical spills and full traffic during cure period. Premature exposure may cause permanent staining or discoloration. Do Not use abrasive cleaning methods during the first week after installation.

## **WALL CLEANING PROCESS:**

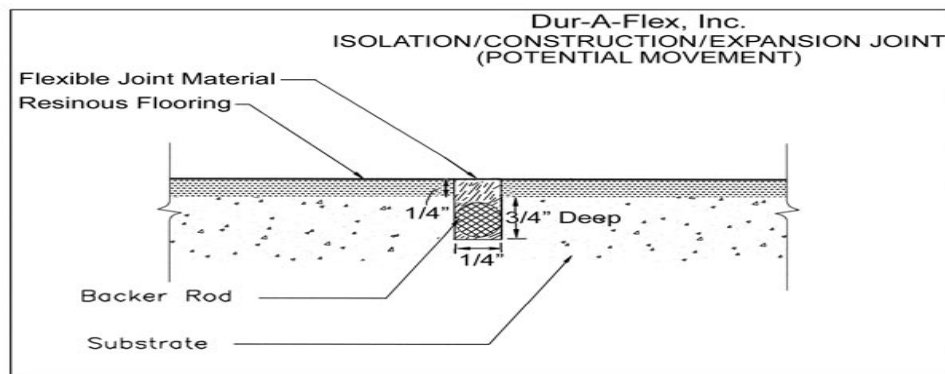
1. Application – Apply EZ-CLEAN at a 1:64 dilution rate with hot water while using a deck brush, foamer/sprayer or power washer.
2. Scrub walls with deck brush.
3. Rinse walls with clean water.

For further technical assistance regarding this guide, please call DUR-A-FLEX, Inc. Technical Services at (800) 253-3539, or e-mail [info@dur-a-flex.com](mailto:info@dur-a-flex.com).

The two basic joint types are Moving (dynamic) and Non-Moving (static).

## Moving Joints

**Construction, Expansion and Isolation** joints are considered moving joints which allow horizontal and vertical movement between the slab and adjoining structures, such as walls and columns, helping to minimize cracking where the two meet.



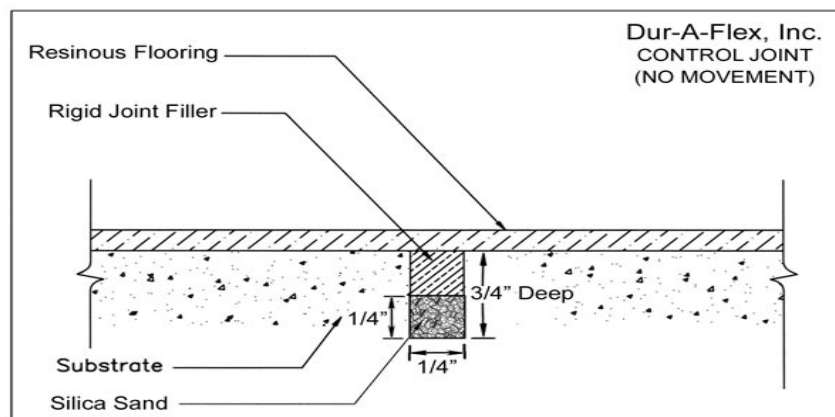
Prior to filling moving joints Dur-A-Flex, Inc. recommends “honoring” these joints by making a saw cut through the finished floor system at a depth of  $\frac{3}{4}$ ” deep and  $\frac{1}{4}$ ” wide with a diamond blade saw attached to a vacuum. A bond breaker such as backer rod (closed cell) must be added to the bottom of the joint.

**Be sure to mark the location of the joints prior to the installation of the finished floor.**

**Potential cracking and or stress/stretch lines (white lines) may occur on all resinous floor systems over or on either side of moving joints if the joints are not saw cut and properly filled. Also if there is a variance of temperature of 20 degrees or more from the time the joint is filled and coated to its operational temperature, hairline cracking could occur even on non-moving joints.**

## Non-Moving Joints

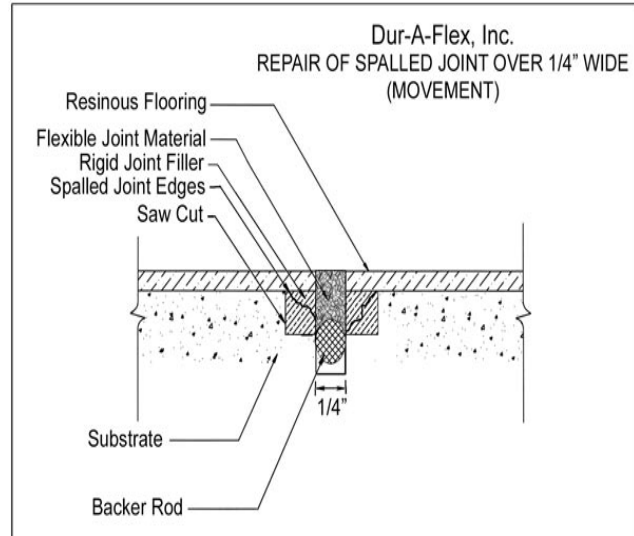
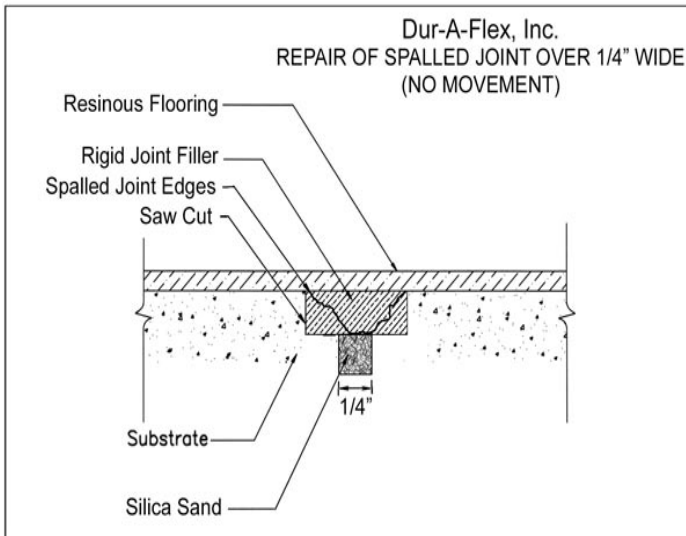
**Control and or Contraction** joints are considered non-moving joints which accommodate shrinkage and relieve internal stresses during the curing process of the concrete.



Prior to filling non-moving joints be sure to prepare them by removing all laitance, debris and sealers to a depth of 3/4" deep and 1/4" wide with a diamond blade saw attached to a vacuum. A bond breaker such as silica sand (30-40 mesh) at 1/4" deep may be added to the bottom. This will stop the joint material from seeping if the concrete is cracked through.

**Repair of damaged/spalled joints**

Saw cut each side of spalled area and chip out the center with a chipping hammer or consider the use of a series of blades to reach the proper width. If using multiple blades, the center blade should reach the depth of the original joint and the outer blades should achieve a cut creating a "T" shape after cutting.



**Installation Timing**

The American Concrete Institute (ACI) recommends that filling of industrial floor joints be deferred 60-90 days after floor slab pour or as long as possible. This is to allow control and construction joints time to open closer to their ultimate width through the concrete shrinkage process. (In freezer/cooler areas, floor should be stabilized at ultimate operating temperature for 7 days prior to installation).

Prior to treatment of joints be sure to contact the facilities owner or manager to determine how long the concrete has cured as well as the location of moving and non-moving joints.

Refer to table below to determine what product is used where:

JOINTS	TYPE	BOND BREAKER	JOINT MATERIAL (1/4 inch wide)	JOINT MATERIAL (over 1/4 inch wide)
Non-moving (Static)	Control/Contraction	Silica Sand (30-40 mesh) at 1/4" deep	<ul style="list-style-type: none"> <li>Epoxy flooring systems use Glaze #4 with Cab-O-Sil (No-Sag #2): Typical mix is 1 pint Glaze #4 hardener, 1 quart Glaze #4 resin, 3 quarts Cab-O-Sil (No-Sag #2)</li> <li>Poly-Crete HF, MD and SL flooring systems typically cover and fill this size crack/joint</li> <li>MMA flooring systems use MMA S/L Filler Mix</li> </ul>	<ul style="list-style-type: none"> <li>Epoxy flooring systems use Glaze #4 with Dur-A-Crete.</li> <li>Poly-Crete flooring systems use Poly-Crete MD or WR</li> <li>MMA flooring systems use SL Filler Mix or Cryl-A-Tex.</li> </ul>
Moving (Dynamic)	Expansion/Construction/ Isolation	Backer Rod 2 X wider than joint	Flexible joint material (Metzger/Mcguire, Versaflex or equivalent)	Flexible joint material (Metzger/Mcguire, Versaflex or equivalent)

**References:**

- ACI 224 "Joints in Concrete Construction"
- ASTM Standards "C 1193-0 and C-920-02"
- National Ready Mixed Concrete Association "Concrete in Practice"
- Metzger/McGuire, Inc.
- SSPC



**DUR-A-FLEX**  
INNOVATION FROM THE FLOOR UP

## Manufacturer's One-Year Limited Warranty

Seller warrants that its goods are free from any defects in material or workmanship and are in conformity with its published specifications, subject to standard tolerances for variations, except that color cannot be warranted as to uniformity of shade or conformity to samples. Seller's sole liability and Customer's exclusive remedy for breach of any warranty as expressly limited, at Seller's option, is to replace material at the original FOB point or refund of the purchase price. A written notice of claim for breach of warranty must be delivered to Seller within sixty (60) days of observation and no more than **one (1) year** after delivery of the product. Seller shall be allowed reasonable opportunity to investigate the claim and inspect the product. In no event may Customer recover damages exceeding the price paid by the Customer for the specific goods as to which the claim is made, whether based on contract, tort, or any other theory.

**SELLER MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY ARE HEREBY DISCLAIMED. SELLER SHALL NOT BE LIABLE FOR PROSPECTIVE PROFITS OR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES. ALL WARRANTIES ARE NULL AND VOID IF CUSTOMER HAS NOT PAID IN FULL IN ACCORDANCE WITH SELLER'S PAYMENT TERMS.** Seller shall not be liable for any claim resulting from failure to utilize product in the manner in which it was intended and in accordance with instructions provided for use of product on Dur-A-Flex, Inc.'s web site, product catalogue or otherwise.

Dur-A-Flex, Inc. shall not be liable, and Customer waives all claims made against Dur-A-Flex, Inc. for prospective profits or special, indirect, incidental or consequential damages, or any other damages or remedies not specifically provided above, based upon negligence, breach of warranty, strict liability in tort or any other cause of action. Dur-A-Flex, Inc. will not be liable for, and the Customer shall defend, indemnify and hold harmless (including without limitation costs and attorney's fees) Dur-A-Flex, Inc. from, any loss, damage or injury to persons or property, or claim thereof, resulting from (A) Customer's or any third party's or end user's handling, storage, transportation, resale, application or other use of the goods, or in combination with other substances, or otherwise or (B) selection or recommendation by Dur-A-Flex, Inc. of any applicator or other contractor. Any controversy or claim arising out of or relating to the within Warranty, terms and conditions shall be settled by arbitration in accordance with the commercial arbitration rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. Venue for the arbitration shall be in Hartford, Connecticut.

Customer & Application:

Agreed and Accepted by:

\_\_\_\_\_  
Patrick J. Meade  
Vice President, Sales & Technical Support

January 1, 2012  
Date

