



DUR-A-FLEX
INNOVATION FROM THE FLOOR UP

CRYL-A-STAT ESD SYSTEM

SUBMITTAL PACKAGE CONTENTS:

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- CHEMICAL RESISTANCE CHART
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CRYL-A-STAT ESD 401

DESCRIPTION

CRYL-A-STAT ESD-401 is a 100% solids static dissipative methyl methacrylate (MMA) based, acrylic reactive resin. It is formulated to form a monolithic bond with other DUR-A-FLEX MMA systems and to be UV resistant.

BENEFITS

- VOC compliant, < 100 g/L
- Fast cure, full strength in less than one hour
- UV resistant
- Seamless, no cold joints, always bonds to itself
- Prevents electrical charge accumulation

TYPICAL USES

CRYL-A-STAT ESD-401 is intended to be used in areas where a static dissipative coating is needed.

COLORS

CRYL-A-STAT ESD-401 is available in silver grey.

PACKAGING & STORAGE CONDITIONS

CRYL-A-STAT ESD-401 is available in 5-gallon (19 liter) pails. Store in a cool and dry place, below 85° F (30°C), out of direct sunlight. Do not store near open flame or food. The shelf life is 6 months from ship date in the unopened container.

SURFACE PREPARATION

The substrate must be dry and free from oil, grease dirt, bituminous and other contaminants. CRYL-A-STAT ESD-401 is to be applied over CRYL-A-FLEX methyl methacrylate (MMA) primer and/or body coats.

APPLICATION METHOD

CRYL-A-STAT ESD-401 can be brush or roller applied. Prior to use, the CRYL-A-STAT ESD-401 must be properly mixed to ensure that the pigment that has settled to the bottom is dispersed. The appropriate amount of CRYL-A-CURE is determined by the use of the CRYL-A-STAT ESD-401 Mixing Chart and is a function of the material and substrate temperature. CRYL-A-STAT ESD-401 should only be used as a sealer. Ground connections at 30 foot intervals must be installed for static dissipative flooring systems.

COVERAGE/SPREAD RATES

CRYL-A-STAT ESD-401 is applied in two coats at a rate of 80-115 square feet per gallon per coat, depending on the texture/profile of the surface.

MOISTURE CONCERNS

Normal limits for moisture vapor transmission for MMA floor systems are 5 lbs./1,000 sq. ft./24 hour using the calcium chloride test per ASTM F-1869 or 85% relative humidity using in-situ Relative Humidity Testing per ASTM F-2170. Please refer to the Floor Evaluation Guidelines at www.dur-a-flex.com for complete details.

CURE

CRYL-A-STAT ESD-401 will dry to the touch, typically in 45 minutes. At this time it is ready for subsequent applications or for use.

TECHNICAL INFORMATION

CRYL-A-STAT ESD-401 is part of a wide range of special repair and wearing materials supplied by DUR-A-FLEX. If you require further information on this or any other of our products please contact our Technical Department.

PHYSICAL CHARACTERISTICS

Solid Content	100%
Pot Life @ 68 F	10-15 minutes
Cure Rate @ 68 F	45 minutes
Recoat Time	45 minutes
Surface resistivity ASTM D257	1x10 ⁶ to 1x10 ⁸

CHEMICAL RESISTANCE

This product is resistant to many common chemicals. Please refer to the master “**Chemical Resistance Chart**” for actual resistance to specific chemicals/reagents.

CLEANING

This product is part of a low maintenance flooring solution, however, certain textures and service environments do require certain procedures. Please refer to the master “**Cleaning Guide**”.

CAUTION

CRYL-A-STAT ESD-401 resins are flammable liquids in their uncured state. Smoking, open flames or sparks should not be permitted during the handling of the product. Workers should wear protective clothing consisting of splash-proof goggles, impermeable gloves and, where exposure limits are exceeded, an organic vapor respirator should be used. Air powered or explosion proof mixing equipment is required. Adequate cross ventilation should be provided and explosion-proof fans may be required. All foodstuffs must be removed during application of the system.

Refer to the Safety Data Sheet for proper personal protective equipment to use when handling this product. Use only as directed. KEEP OUT OF REACH OF CHILDREN.

If substrate and/or material temperature is above 90 F (32 C), Do Not apply material. Detailed application instructions should be obtained, read and understood prior to commencement of application.

IMPORTANT!

Before using DUR-A-FLEX products, read and understand its accompanying Safety Data Sheet & Application Instructions for important safety information.

STANDARD TERMS AND CONDITIONS OF SALE, INCLUDING STANDARD WARRANTY APPLY - VISIT **DUR-A-FLEX.COM** FOR THE LATEST VERSION

CRYL-A-STAT ESD-401

GENERAL

CRYL-A-STAT ESD-401 is a 100% reactive static dissipative coating, methyl methacrylate (MMA) based, acrylic reactive resin. It is formulated to form a monolithic bond with other DUR-A-FLEX systems and to be UV resistant.

BENEFITS

- VOC compliant-<100 g/L
- Fast cure, full strength in less than one hour
- UV resistant
- Seamless, no cold joints, always bonds to itself
- Prevents electrical charge accumulation

COLORS

CRYL-A-STAT ESD-401 is available in silver grey.

TYPICAL USES

CRYL-A-STAT ESD-401 is intended to be used in areas where a static dissipative coating is needed

SURFACE PREPARATION

The substrate must be dry and free of oil, grease, dirt, bituminous and other contaminants. Unsound concrete and laitance should be removed by appropriate mechanical means. Note, if shot blasting, be careful of blast overlap lines as they may be visible through the coating. Please refer to the DUR-A-FLEX “**Surface Preparation Guide**” for detailed instructions.

MOISTURE CONCERNS

Moisture vapor transmission in the slab should be measured prior to application of polymeric systems to ensure a long lasting installation. Refer to the “**Moisture Assessment Guide**” for more information.

BOND TEST

Prior to application of the primer, Bond Tests shall be conducted to determine adequacy of substrate preparation. The bond of the primer to the substrate should be greater than the tensile strength of the substrate. A successful test shows substrate material and sheared aggregate adhering fully to the sample. If only laitance or a small amount of the substrate is attached, further preparation is required. Refer to the “**Bond Test Guide**” for procedure.

VENTILATION

Prior to any application, proper “negative pressure” ventilation must be established. Refer to the “**CRYL-A-FLEX Ventilation Guidelines**” for details.

APPLICATION METHOD / SPREAD RATE

All MMA resins require the addition of CRYL-A-CURE (BPO) to cure. To determine the correct amount of BPO necessary, refer to the CRYL-A-FLEX Mixing Chart. BPO usage is a function of the material and substrate temperature. **Therefore, the temperature of the floor must be measured prior to any mixing or application of material.**

Cryl-A-Stat ESD Mixing Chart

<u>Substrate Temp (F)</u>	<u>Ounces of BPO/ Gallon</u>
<u>40</u>	<u>4.0</u>
<u>50</u>	<u>3.5</u>
<u>60</u>	<u>3.0</u>
<u>70</u>	<u>2.5</u>
<u>80-90</u>	<u>2.0</u>

Due to the fast cure of the material, only make enough material to be applied in 5 minutes. A typical batch size of primer or topcoat is 1 gallon (4 liters). Warmer conditions may dictate a smaller batch size. The primer is applied with a brush or roller at 80 - 125 Sq Ft per gallon to achieve an even, puddle free surface. Substrates that are very porous may require an additional coat. Roller coats are applied with 1/2 inch nap rollers. Rough substrates may require a longer nap to avoid puddles. Rough surfaces and holes must be patched with the appropriate CRYL-A-FLEX system before the body coat is applied. Based on the temperature, add the proper amount of BPO to the CRYL-A-PRIME P-101. Mix for 30 - 60 seconds or until the BPO is completely dissolved. Pour an even ribbon of material out onto the floor and roll to the proper thickness. The primer will cure tack free in 30 - 60 minutes.

If CRYL-A-BOND is used with primer, the next coat must be applied within 16 hours. Failure to do this could result in inadequate inter-coat adhesion.

CRYL-A-STAT ESD-401 can be brush or roller applied. Prior to use, the CRYL-A-STAT ESD-401 must be properly mixed to ensure that the pigment that has settled to the bottom

is dispersed. The appropriate amount of CRYL-A-CURE is determined by the use of the CRYL-A-STAT ESD-401 Mixing Chart and is a function of the material and substrate temperature.

CRYL-A-STAT ESD-401 should only be used as a sealer. Ground connections at 30 foot intervals must be installed for static dissipative flooring systems.

CRYL-A-STAT ESD-401 is applied in two coats at a rate of 80-115 square feet per gallon per coat, depending on the texture/profile of the surface.

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CRYL-A-STAT ESD-401 will dry to the touch, typically in 45 minutes. At this time it is ready for subsequent applications or for use.

PACKAGING

CRYL-A-STAT ESD-401 is available in 5-gallon (19 liter) pails.

TECHNICAL INFORMATION

CRYL-A-STAT ESD-401 is part of a wide range of special repair and wearing materials supplied by DUR-A-FLEX. If you require further information on this or any other of our products please contact our Technical Department.

PHYSICAL CHARACTERISTICS

Percent Reactive	100%
VOC	<100 g/L
Pot Life @ 68 F	10-15 minutes
Cure Rate @ 68 F	45 minutes
Recoat Time	45 minutes
surface resistivity ASTM D257	1x10 ⁶ to 1x10 ⁸

CHEMICAL RESISTANCE

This product is resistant to many common chemicals. Please refer to the Chemical Resistance Chart on our website for actual resistance to specific chemicals/reagents.

CLEANING

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

STORAGE CONDITIONS

Store in a cool and dry place, below 85 F (30C), out of direct sunlight. Do not store near open flame or food. The shelf life is 6 months from ship date in the unopened container.

IMPORTANT: Make sure to properly mix the product before use to ensure that all pigment that has settled to the bottom is dispersed. For best results use a

dispersion blade with a low speed drill. DO NOT MIX THE MATERIAL OVER 1,000 RPM's, as this will tear the conductive material apart. When application is ready add the appropriate amount of BPO and mix with dispersion blade for 1 minute.

CAUTION

CRYL-A-STAT ESD-401 resins are flammable liquids in their uncured state. Smoking, open flames or sparks should not be permitted during the handling of the product. Workers should wear protective clothing consisting of splash-proof goggles, impermeable gloves and, where exposure limits are exceeded, an organic vapor respirator should be used. Air powered or explosion proof mixing equipment is required. Adequate cross ventilation should be provided and explosion-proof fans may be required. All foodstuffs must be removed during application of the system.

As with all chemical products, individuals may have different reactions to exposure to specific products. This is dependent upon many factors, including the individual's personal characteristics, the size of the installation, the ventilation available, the intensity of the exposure or the length of the exposure. Individuals may experience discomfort during the installation process of one product, but not another.

In some cases this is experienced as a skin irritation and in others it is experienced as an inhalant irritation. Typically, it disappears once the exposure is eliminated. In some cases people can become "sensitized" to a product and experience the discomfort every time there is exposure without Personal Protective Equipment ("PPE").

To protect yourself from various exposures or discomfort during the mixing and application of our products, we recommend covering exposed skin including, using gloves, long sleeves, safety glasses and a respirator such as the 3M 8577 P95 Universal Disposable Carbon Respirator or a cartridge respirator.

Use only as directed. KEEP OUT OF REACH OF CHILDREN.

If substrate and/or material temperature is above 90 F (32 C), Do Not apply material.

Detailed application instructions should be obtained, read and understood prior to commencement of application.

IMPORTANT!

Before using DUR-A-FLEX products, read and understand its accompanying Safety Data Sheet.

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To protect yourself from various exposures or discomfort during the mixing and application of our products, we recommend covering exposed skin including, using gloves, long sleeves, safety glasses and a respirator such as the 3M 8577 P95 Universal Disposable Carbon Respirator or a cartridge respirator.

Use only as directed. KEEP OUT OF REACH OF CHILDREN.

Do not reseal moisture-contaminated hardener. This will result in carbon dioxide generation or possible violent rupture of container.

Cryl-A-Stat ESD 401 SAFETY DATA SHEET

1. IDENTIFICATION

Product Identifier: Cryl-A-Stat ESD 401

Recommended use: Floor Surfacing

Manufacturer Name: Dur-A-Flex, Inc.
95 Goodwin Street
East Hartford, CT 06108

Telephone number: 860-528-9838

Emergency phone number: 1-800- 424-9300 (CHEMTREC)

Date of Preparation: September 8, 2014

2. HAZARD(S) IDENTIFICATION

Classification:

Physical	Health
Flammable Liquid Category 2	Skin Irritation Category 2 Skin Sensitization Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (Respiratory Irritation) Specific Target Organ Toxicity Repeat Exposure Category 2

Labeling:

Danger!



Hazard statement(s)

Flammable liquid and vapor.
Causes skin irritation
May cause an allergic skin reaction
May cause respiratory irritation.
May cause damage to liver and thyroid through prolonged or repeated exposure by ingestion.

Precautionary statement(s)

Keep away from heat, sparks, open flames, and hot surfaces.
No smoking.
Keep container tightly closed.
Ground and bond container and receiving equipment
Use explosion-proof electrical, ventilating and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe mist, vapors or spray.
Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Contaminated work clothing should not be allowed out of the workplace.

Wear protective gloves, eye protection and face protection.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical attention.

Wash contaminated clothing before reuse.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER or doctor if you feel unwell.

Get medical attention if you feel unwell.

In case of fire: Use water fog, carbon dioxide, foam or dry chemical to extinguish.

Store in a well-ventilated place. Keep cool. Keep container tightly closed.

Store locked up.

Dispose of contents and container in accordance with local and national regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration
Methyl Methacrylate	80-62-6	60-80%
Acrylate/Methacrylate Polymer	Proprietary	10-20%
Triethylene Glycol Dimethacrylate	109-16-0	1-10%
A mixture of branched and linear C7-C9 alkyl propionates	Proprietary	1-5%
Crystalline Silica, Quartz	14808-60-7	1-5%
Titanium Dioxide	13463-67-7	1-5%

* The titanium dioxide and crystalline silica in this product are inextricably bound in a manner that no exposure occurs during normal use and handling. Therefore this product is not classified as a carcinogen.

The specific identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

Inhalation: Remove victim to fresh air. If breathing is difficult, have qualified personnel administer oxygen. If breathing has stopped, administer artificial respiration. Get medical attention.

Skin contact: Remove contaminated clothing. Wash skin thoroughly with soap and water. If irritation or other symptoms develop, get medical attention. Launder clothing before re-use.

Eye contact: Flush with large quantities of water for several minutes, holding the eyelids apart. Get medical attention if irritation persists.

Ingestion: If conscious, rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious or convulsing person. Get medical attention.

Most important symptoms/effects, acute and delayed: Causes skin irritation. May cause eye and respiratory tract irritation. May cause allergic skin reaction (skin sensitization).

Indication of immediate medical attention and special treatment, if necessary: None required under normal conditions of use.

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media: Use water fog, carbon dioxide, foam or dry chemical. Cool fire exposed containers with water.

Specific hazards arising from the chemical: Vapors are heavier than air and may travel to ignition source and flash back. Heat of fire may cause an exothermic auto polymerization reaction. Emits toxic fumes under fire conditions. Closed containers may explode due to pressure build up when exposed to extreme heat. Combustion may produce carbon oxides, toxic fumes and hydrocarbons.

Special protective equipment and precautions for fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures: Provide explosion-proof ventilation. Avoid contact with skin, eyes or clothing. Avoid breathing vapors. Wear appropriate protective clothing as described in Section 8. Eliminate all ignition sources.

Environmental precautions: Avoid release to the environment. Report releases as required by local, state and federal authorities.

Methods and materials for containment and cleaning up: Contain and collect with an inert absorbent. Place into an appropriate container for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with eyes, skin, and clothing. Avoid breathing vapors or mist. Wash thoroughly after handling. Wear protective clothing and equipment as described in Section 8. Use with adequate ventilation. Ground container when pouring. Keep away from heat, sparks, flames and all sources of ignition. Do not expose to direct sunlight. Empty containers retain product residues and can be hazardous. Follow all MSDS precautions when handling empty containers.

Conditions for safe storage, including any incompatibilities: Store in a cool, dry, well ventilated area. Keep container tightly closed when not in use. Do not store in direct sunlight. Prevent moisture contact. Protect from physical damage. Keep away from oxidizers and other incompatible materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure guidelines:

Methyl Methacrylate	100 ppm TWA OSHA PEL 50 ppm TWA ACGIH TLV 100 ppm ACGIH TLV STEL
Acrylate/Methacrylate Polymer	None Established
Triethylene Glycol Dimethacrylate	None Established
A mixture of branched and linear C7-C9 alkyl propionates	None Established
Crystalline Silica, Quartz	0.025 mg/m ³ TWA ACGIH TLV <u>10 mg/m³</u> % SiO ₂ +2 TWA OSHA PEL (respirable)
Titanium Dioxide	15 mg/m ³ TWA OSHA PEL (total dust) 10 mg/m ³ TWA ACGIH TLV

Appropriate engineering controls: Use with adequate general or local exhaust ventilation to maintain exposures below occupational exposure limits. Use explosion-proof equipment where required.

Personal Protective Equipment:

Respiratory protection: None required with adequate ventilation. An approved air-purifying respirator with an organic vapor cartridge may be permissible under certain limited circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. Selection and use of respiratory equipment must be in accordance with appropriate regulations and good industrial hygiene practice.

Skin protection: Wear impervious gloves.

Eye protection: Wear safety chemical goggles when the possibility exists for eye contact due to splashing or spraying material.

Other: Wear impervious clothing if needed to prevent any contact with this product, such as gloves, apron, boots, or whole body suit.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, color, etc.): Moderately turbid fluid.

Odor: Sweet ester odor

Odor threshold: Not available	pH: Not available
Melting Point/Freezing Point: Not available	Boiling Point: 212°F / 100°C
Flash point: 50 °F / 10°C (Setaflash)	Evaporation rate: >1 (butyl acetate = 1)
Flammability (solid, gas): Not applicable	
Flammable limits: LEL: 2.1% (Methyl Methacrylate)	UEL: 12.5% (Methyl Methacrylate)
Vapor pressure: 35 mmHg @ 20°C (Methyl Methacrylate)	Vapor density: >1
Relative density: ~1	Solubility(is): 16 g/L (in water)
Partition coefficient: n-Octanol/water: Not applicable	Auto-ignition temperature: >500°F / 260°C (Methyl Methacrylate)
Decomposition temperature: Not available	Viscosity: Not available

10. STABILITY AND REACTIVITY

Reactivity: Polymerization can occur.

Chemical stability: Stable when stabilized. The product is unstable at elevated temperatures and pressures.

Possibility of hazardous reactions: Methyl methacrylate can undergo hazardous polymerization if exposed to excessive heat, peroxides and polymerization catalysts.

Conditions to avoid: Avoid heat, sparks and open flames.

Incompatible materials: Avoid contact with oxidizing agents, reducing agents, peroxides and polymerization catalysts.

Hazardous decomposition products: Thermal decomposition may produce carbon oxides, toxic fumes and hydrocarbons.

11. TOXICOLOGICAL INFORMATION

Inhalation: May cause respiratory tract irritation. Methyl methacrylate has been shown to cause respiratory irritation in studies in laboratory animals.

Ingestion: Swallowing may cause gastrointestinal irritation, nausea and diarrhea.

Skin contact: Causes skin irritation. Methyl methacrylate has been shown to cause severe irritation when tested undiluted on rabbit skin. Causes skin sensitization. Cases of contact dermatitis has been reported in workers exposed to methyl methacrylate.

Eye contact: May cause eye irritation. Methyl methacrylate has been shown to cause mild irritation to the conjunctiva in animal studies.

Chronic effects from short- and long-term exposure: In subchronic inhalation studies with methyl methacrylate, systemic toxic effects were seen in rats to the liver, kidney, brain, spleen and bone marrow >1000 ppm. Oral administration of methyl methacrylate to rats resulted in a NOAEL of 200 mg/kg. In a subchronic oral study in rats, a mixture of branched and linear C7-C9 alkyl propionates was shown to cause elevated serum liver enzyme levels and enlarged livers. Treatment-related effects, including mild anemia and toxic effects in the liver, were seen. Slight activity of the thyroid gland was also recorded and considered a secondary response to the effects in the liver. The no observable effect level (NOEL) was 2 mg/kg.

Reproductive Toxicity: This product is not expected to cause adverse reproductive or developmental effects. Methyl methacrylate did not cause reproductive effects on male fertility when animals were exposed to 9000 ppm. No teratogenicity, embryotoxicity or fetotoxicity has been observed at exposure levels up to and including 2028 ppm

Sensitization: Methyl methacrylate and triethylene glycol dimethyl acrylate have been shown to cause sensitization in animal studies.

Mutagenicity: Methyl methacrylate was negative in sister chromatid exchange assay in mammalian cells and in and in a vivo chromosome aberration assay.

Carcinogenicity: Titanium dioxide is listed by IARC as a group 2B carcinogen (possible human carcinogen). Respirable crystalline silica, quartz is listed by IARC as a group 1 carcinogen (carcinogenic to humans), by NTP as a "known to be a human carcinogen" and by ACGIH as an A2 (suspected human carcinogen). These components are encapsulated in a polymer matrix so no inhalable exposure occurs during use or disposal. None of the other components >0.1 are listed by OSHA, IARC, NTP or ACGIH as a carcinogen.

Acute Toxicity Values: No toxicity data for the product. Acute Toxicity Estimate: Oral rat LD50 >12048 mg/kg

Methyl Methacrylate: Oral rat LD50 7800 mg/kg; Inhalation rat LC50 3750 mg/L/8 hr; Dermal rabbit LD60 >5000 mg/kg
 Acrylate/Methacrylate Polymer: No toxicity data available
 A mixture of branched and linear C7-C9 alkyl propionates: Oral rat LD50 >2000 mg/kg, Dermal rat LD50 >2000 mg/kg
 Triethylene Glycol Dimethacrylate: Dermal rabbit LD50 > 2000 mg/kg
 Crystalline Silica, Quartz: Oral rat LD50 >22,500 mg/kg
 Titanium Dioxide: Oral rat LD50 > 5000 mg/kg, Inhalation rat LC50 6.82 mg/L/4 hr,

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Methyl Methacrylate: 96 hr LC50 Pimephales promelas 130 mg/L; 24 hr LC50 daphnia magna 1760 mg/L
 Acrylate/Methacrylate Polymer: No data available
 Triethylene Glycol Dimethacrylate: 96 hr LC50 Danio rerio 16.4 mg/L; 72 hr EC50 Pseudokirchnerella subcapitata > 100 mg/L
 A mixture of branched and linear C7-C9 alkyl propionates: 96 hr LC50 Brachydanio rerio > 9.9 mg/l, 48 hr EC50 daphnia magna 3.2 mg/l, 72 hr EC50 Scenedesmus sp. >2 mg/L
 Titanium Dioxide: Oral rat LD50 > 5000 mg/kg, Inhalation rat LC50 6.82 mg/L/4 hr,
 Crystalline Silica: 72 hr LC50 carp >10,000 mg/L

Persistence and degradability: Methyl methacrylate and triethylene glycol dimethacrylate are readily biodegradable.

Bioaccumulative potential: Methyl methacrylate has a BCF of 2.97.

Mobility in soil: Methyl methacrylate has a high mobility in soil.

Other adverse effects: None known.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with all local, state and federal regulations.

14. TRANSPORT INFORMATION

	UN Number	Proper shipping name	Hazard Class	Packing Group	Environmental Hazard
DOT	UN1247	Methyl Methacrylate Monomer, Stabilized	3	II	None
TDG	UN1247	Methyl Methacrylate Monomer, Stabilized	3	II	None
IMDG	UN1247	Methyl Methacrylate Monomer, Stabilized	3	II	None
IATA	UN1247	Methyl Methacrylate Monomer, Stabilized	3	II	None

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not applicable – product is transported only in packaged form.

Special precautions: None known

15. REGULATORY INFORMATION

CERCLA: This product has a Reportable Quantity (RQ) of 1250 lbs. (based on the RQ for Methyl Methacrylate of 1000 lbs). Releases above the RQ must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA Hazard Category (311/312): Acute Health, Chronic Health, Fire Hazard, Reactive Hazard

SARA 313 Information: This product contains the following chemicals subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372):

Methyl Methacrylate	80-62-6	60-80%
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California Proposition 65

This product contains the following chemicals known to the State of California to cause cancer or reproductive toxicity (birth defects): None

EPA TSCA Inventory: All of the ingredients in this product are listed on the EPA TSCA Inventory.

CANADA:

Canadian WHMIS Classification: Class B (Flammable Liquid), Class D Division 2 Subdivision B (Toxic Material Causing other Toxic Effects)

This product has been classified under the CPR and this SDS discloses information elements required by the CPR.

16. OTHER INFORMATION

NFPA Rating: Health = 2 Flammability = 3 Instability = 2
HMIS Rating: Health = 2 Flammability = 3 Physical Hazard = 2

SDS Revision History: Converted to GHS format. All sections revised.

Date of preparation: September 8, 2014

Date of last revision: New SDS

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 Guidelines in the Contractor's Center of our website to assist in determining 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.

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.

Surface Prep Guidelines (*Continued*)

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 or 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 II 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 II to entire area immediately followed by subsequent epoxy coatings.

Surface Prep Guidelines (*Continued*)

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 RAPID PATCH for cracks, holes, spalls, and voids in concrete up to 1/4" thick. **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 joint details on our website in the Contractor Center section @ www.dur-a-flex.com.

Use DUR-A-GLAZE RAPID PATCH for cracks, holes, spalls, and voids in concrete up to 1/4" thick.



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 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. It is this excess that can emit from the slab. Moisture is also a concern when the concrete slab has no vapor retarder installed, or the vapor retarder has been punctured.

How does moisture move through the slab?

Capillary moisture: ground water touches the bottom of the concrete slab, and wicks into the concrete through microscopic bleeder water channels until it reaches the coating surface. As the water comes through the slab, it brings calcium/sodium salts with it that can degrade the bond line and cause the coating to delaminate.

Osmotic Moisture: actual water vapor transmission through the concrete slab condenses again at the bond line and causes the same problem as in the capillary moisture case. This can happen when the water table is far below the slab with an improperly installed or missing vapor barrier. Three conditions are needed for osmosis to occur: a semi-permeable membrane, which can be the polymer primer or the upper layers of the slab, a gradient of ionic activity (soluble salts, which are indigenous to concrete), and a source of moisture vapor. If any one of these three things is removed, osmosis cannot occur.

Hydrostatic: the surrounding water table is higher than the concrete slab on grade. Because water seeks its own level, it is forced through the slab under pressure. Both the pressure and the water cause the coating to delaminate.

The volume of moisture that can pass through a slab depends on the porosity of the slab. Porosity is a direct result of the water/cement ratio in the concrete mix design. As the water/cement ratio increases, the porosity of the concrete increases exponentially.

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 may not be the only factor. In reality, the presence of ionic compounds in the concrete can also play a role. Specific ionic components of the surface chemistry of the slab (the top 0 - 3/16”(5mm)), when present at certain levels, can cause a failure to occur.

Concrete defects resulting from alkaline-silicate reaction (ASR) or alkaline-aggregate reaction (AAR) within the slab may also contribute to floor failure.

How do I test my floor?

Dur-A-Flex has developed a chart to assist you with identifying the moisture limits for each type or Dur-A-Flex resin/flooring system. If you are planning to use our Epoxy or MMA, Dur-A-Flex recommends using in-situ Relative Humidity Testing per ASTM F-2170 as a quantitative test method. Although traditional calcium chloride testing may be used, RH differs in that it is not significantly impacted by ambient temperature and relative humidity conditions in the building and thus likely to provide more accurate readings. The use of calcium chloride testing on lightweight concrete on elevated decks is not recommended.

In cases where a product can tolerate high levels of moisture such as Poly-Crete, Hybri-Flex or Dur-A-Glaze MVP, Dur-A-Flex may recommend that cores be taken and analyzed to determine the levels of ionic components (salts) in the slab. Dur-A-Flex offers in-house core testing using ion-chromatography technology. Refer to the Dur-A-Flex Core Analysis Program on our website for more information.

Note: Test results from cores taken after osmotic blistering has already occurred may not be accurate due to the ionic components transferring from the substrate to the blisters.

Dur-A-Flex Floor Evaluation Guidelines

Resin system	EPOXY	MMA	URETHANE		HYBRIDS	MITIGATION
Product Group	Dur-A-XXX, Shop Floor	Cryl-A-Flex	ACCELERA™	Poly-Crete®	Hybri-Flex®	Dur-A-Glaze MVP Primer
Calcium Chloride (CaCl) - lbs. maximum per 1,000 SF per 24 Hrs. (per ASTM F1869)	3	5 (with bond test)	3	20*	20*	20*
Relative Humidity (RH) - % maximum (per ASTM F2170)	75%	85% (with bond test)	75%	99%*	99%*	99%*

* POLY-CRETE, HYBRI-FLEX and DUR-A-GLAZE MVP	
Old Concrete (>1 yr. old)	Core analysis testing is recommended to rule out the potential for osmotic blistering caused by higher than normal levels (see below) of soluble ion (salt) deposits at or near the surface. Refer to the Dur-A-Flex Core Analysis Program.
New Concrete (<1 yr. old)	Core testing is not required if NO concrete curing compounds, hardeners, or densifiers were used. The use of any of these products may cause soluble ion (salts) deposits at or near the surface to exceed normal levels (see below), potentially producing conditions for osmotic blistering. In these cases Dur-A-Flex recommends a core analysis to determine if these levels are suitable for an installation. Refer to the Dur-A-Flex Core Analysis Program.

The following data is based on testing of a concrete substrate profiled per Dur-A-Flex Surface Preparation Guidelines and free of any contaminants that could increase levels of the soluble ions listed. This data is to be used as a guide only. Please contact your local Dur-A-Flex Sales Representative or the Dur-A-Flex Technical Departments for a thorough analysis of your results.

Normal Soluble Ion Levels in Substrate (parts per millions)

Sodium (Na)	~200-800 ppm
Potassium (K)	~200-800 ppm
Chloride (Cl)	~10-100 ppm
Sulfate (SO4)	~1500-5500 ppm

Pre-installation Acceptable Soluble Ion Levels in Substrate by Product (combined Na, K, Cl):

Epoxy, MVP, MMA, ACCELERA	1600 ppm
Poly-Crete SLB, MD, HF (w/topcoats), Hybri-Flex E, M or A	3200 ppm
Poly-Crete MD, HF (no topcoats)	4800 ppm

In all cases, Dur-A-Flex, Inc. products must be applied as per Dur-A-Flex Application Instructions on structurally sound and clean areas in which the concrete meets acceptable industry standards as defined in ACI Committee 201 Report, "Guide to Durable Concrete." Dur-A-Flex shall not be liable for bond failures caused by deficiencies in the substrate including, but not limited to, the presence of ionic compounds or soluble salts, alkali silicate reaction, alkali aggregate reaction, shale-pop, and other expansive reactions of aggregates and reinforcements. Dur-A-Flex recommends all concrete be tested for quality by a licensed petrographer.

This data is based on the application of listed materials to the top surface of the flooring

Chemical Name	% Conc.	Epoxies				Urethanes							Acrylics
		Dur-A-Gard	Glaze #4	Novolac	Ultra Clear	Armor Top	ACCELERA	Glaze #5	Poly-Thane 2 HS	Poly-Crete HF, MD, TF Plus	Poly-Crete Color Fast	MMA	
Acetic Acid	10%	R	R	R	R	R	R	R	R	R	R	R	R
Acetic Acid	30%	D	D	R	R	S	S	D	D	R	R	S	D
Acetic Acid	50%	N	N	R	N	S	S	D	D	D	S	N	
Acetic Acid,3%, and Propionic Acid		R	R	R	R	R	R		R	R	R	R	R
AC-103	100%	R	R	R	D	R	D	D	R	R	D	R	R
Acetone		N	N	N	N	R	R	D	R	R	R	N	
ACP-99 Ketone		N	N	D	N				R			N	
Alum	48%	N	N	R	N				D	D		R	
Aminoethanolamine		S	S	S	S				S	R		S	
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	D	
Antifreeze		R	R	R	R	R	R	R	R	R	R	R	R
Aromatic 100		D	D	R	D				R	D			
Aromatic hydrocarbons-Super Hiflash 100		D	D	R	D				R	D			
Avance Grease Cutter		D	R	R	R	R	R	R	R	DS	D	R	
Avance Pot and Pan Detergent		R	R	S	R	R	R	R	R	DS	R	R	
Benzene		N	N	D	N		R		R	N		N	
Benzyl Alcohol	Photo	D	D	R	D	R	N	D	R	D	D	N	
Betadine	10%	S	DS	DS	DS	S	R	S	S	S	S	S	S
Boric Acid	4%	R	R	R	R			R	R	R		R	
Brake Fluid, DOT 3		D	D	D	D	R			R	D	N	R	
Butanol/Methyl Cellosolve		N	N	D	N				R	N		N	
Butyl Alcohol		D	D	R	D				R	D		N	
Butyl Carbitol		D	D	R	D				R			N	
Butyl Cellosolve		N	N	D	N				R			N	
Butyl Cellosolve acetate		N	N	D	N				R			N	
Carbon Tetrachloride		R	R	R	R				R			N	
Caustic Soda solution		R	R	R	R	R	R	N	R	R	R	R	R
Chlorine Bleach 2000		R	D	R	D	R	R	R	R	S	R	R	R
Chromic Acid	10%	S	S	S	DS	S	S	DS	S	S	S	S	S
Chromic Acid	40%	N	N	S	N	R	R	DS	DS	DS		DS	DS
Chloraprep One-Step	2%	S	R	S	S	S	R	R	R	S	S	R	R
CIP 100 Cleaner	100%	D	R	R	R	R	R	D	R	R	R	R	R
CIP 200 Cleaner	100%	DS	DS	DS	DS	D	DS	DS	DS	DS	DS	DS	DS
CIP 220 Cleaner	100%	N	N	N	N	DS	R	DS	R	S	S	R	R
CIP 300 Cleaner	100%	R	R	R	R	R	R	R	R	R	R	R	R
Citric Acid	10%	R	R	R	R	R		R	R	R	R	R	R
Citric Acid	20%	R	R	R	R	R		R	R	R	R	R	R
Citric Acid	50%	N	N	R	N	R		D	R	R	R	R	R
Clorox	10%	R	R	R	R	R	R	D	R	R	R	R	R
Coffee		S	S	R	S	R	R	S	R	R	R	R	R
Cola	90C	N	N	DS	N	S	S	S	S	S	S	S	S
Cola	RT	D	D	R	D	R	R	R	R	R	R	R	R
Copper Sulfate		S	S	S	S				S	S		S	
Coulter Tru Color Wright Stain		S	S	S	S	S	S	S	S	S	S	S	S
Cupric Chloride		S	S	S	S				S	S		S	
Cyclohexanone		D	D	R	D				R	D		R	
Detergent, heavy duty		R	R	R	R	R			R	R	R	R	R
Diacetone alcohol		N	N	D					R			N	
Diesel		R	R	R	R	R	R	R	R	R	R	R	R
Dimethyl ethanol amine		S	S	S	S				S				
Dimethylamineborane		S	S	S	S				S				
DMF		N	N	N	N	R	R	S	R	N	S	S	
Docosanic Acid (in ethanol)	2.50%	N	N	R	N				R	N			
Drano- (sodium hydroxide and aluminum)		D	D	R	D	R			R	R	R		
DuraPrep	2%	N	DS	N	DS	DS	DS	DS	DS	S	S	DS	DS
Eco-lab AC-3 Cleaner		N	N	R	N	DS	S	N	DS	DS	N	S	S
Eco-Lab Wash & Walk 14278		S		S		S			S		S		
Eco-Lab Neutral Disinfectant Cleaner (NDC)	100%	R	DS	DS	DS	R	R	R	R	DS	DS	R	R
Eco-Lab Neutral Disinfectant Cleaner (NDC)	0.5oz/Gal	R	DS	R	DS	R	R	R	R	DS	DS	R	R
EEP solvent		N	N	D	N	R			R	N	D	N	
Enforce LP (6000 ppm)		R	S	R	R	D	R	R	R	D	D	R	R
Envirocid	100%	N	N	N	N	N	S	N	DS	S	N	N	N
Ethanol	95%	N	N	D	N	R	R	D	R	D		D	
Ethyl Acetate	99%	N	N	D	N				R	D	D	D	
Excellerate Cleaner		R	S	R	R	R	R	R	R	R	R	R	R
Fluoboric Acid		D	D	R	D				R				
Formaldehyde	37%	DS	DS	S	DS	S	S	S	S	S	S	S	S
Gasoline		R	R	R	R	R	R	R	R	R	R	R	R
Glycol Ether		N	N	D	N				R			R	
Heating Oil-Home		R	R	R	R	R	R	R	R	R	R	R	R
Heptanoic Acid	96%			D		S		N			N		
Hexane		N	N	D	N	R	R	R	R	R	R	R	R
Hibiclens	4%	R	R	S	S	R	S	D	R	R	S	R	R
Hydraulic fluids		R	R	R	R	R	R	R	R	R	R	R	R
Hydrochloric Acid	5%	S	S	R	S	R	R	DS	R	R	R	R	R
Hydrochloric Acid	20%	S	S	S	S	S	R	N	S	S	S	S	S
Hydrochloric Acid	37%	N	N	S	N	S	S	N	DS	S	DS	S	S

Key: R = Resists degradation and staining S = Stains but resists degradation D = Degrades and stains unless cleaned from surface within 24 hours
 DS = Stains and must be cleaned from the surface within 24 hours to avoid coating degradation N = Not resistant - degraded the coating immediately

Dur-A-Flex Chemical Resistance Data

This data is based on the application of listed materials to the top surface of the flooring

Chemical Name	% Conc.	Epoxies						Urethanes					Acrylics
		Dur-A-Gard	Glaze #4	Novolac	Ultra Clear	Armor Top	ACCELERA	Glaze #5	Poly-Thane 2 HS	Poly-Crete HF, MD, TF Plus	Poly-Crete Color Fast	MMA	
Hydrofluoric Acid	10%	N	N	S	N	N		N	DS	DS	DS	DS	
Hydrofluoric Acid	40%	N	N	N	N	N		N	N	N	N	N	
Hydrofluosilic Acid	30%	R	R	R	R	S		S	R	R	R	R	
Hydrogen Peroxide	25%	D	D	R	D	S	S	D	R	R	R	R	
Hydrogen Peroxide	50%	N	N	R	D	S	S	N	R	R	N	R	
Hydrogen Peroxide (VHP)	560ppm			R		S	R	S	R			R	
Io-Star		DS	S	S	S	S	S	S	S	S	S	S	
Iodine Tincture	2%	S	S	S	S	S	S	S	S	S	S	S	
Isopropanol		D	D	R	D	R	R	R	R	D	R	D	
Isopropyl Acetate	99%	D	D	R	D				R	D		N	
Jet Fuel		R	R	R	R	R	R	R	R	R	R	R	
Kennel Care (Provet Logic Floor Cleaner)	100%	R	R	R	R	R	R	R	R	R	R	R	
Lactic Acid	10%	N	N	R	N	R	S	D	N	R	R	R	
Lactic Acid	30%	N	N	R	N	D	DS	N	N	R	D	R	
Lactic Acid	88%	N	N	R	N	N	N	N	N	R	D	R	
Magnesium Hydroxide		R	R	R	R				R	R		R	
MEK		N	N	N	N	R	R	D	D	N	D	N	
Methacrylate Monomer		D	D	D	D	R	R	N	D	N	N	N	
Methanol		N	N	N	N	R	R	D	R	N	D	N	
Methyl Cellosolve		N	N	N	N				R		D	N	
Methyl dipropasol solvent		N	N	R	N				R		D	N	
Methylene chloride		N	N	N	N				N	N	D	N	
MIBK		N	N	D	N	R	R	DS	R	N	N	N	
Mineral Oil		R	R	R	R	R	R	R	R	R	R	R	
Mineral Spirits		D	D	R	D	R	R	R	R	R	R	R	
Monoethanolamine		S	S	S	S				S				
Motor Oil		R	R	R	R	R	R	R	R	R	R	R	
Mustard, yellow		S	S	S	N	S	R	R	S	S	S	R	
Nickel chloride		S	S	S	S	S	S	S	S	S	S	S	
Nickel Sulfate		S	S	S	S	S	S	S	S	S	S	S	
Nitric Acid	10%	DS	DS	R	DS	S	S	N	DS	S	S	S	
Nitric Acid	20%	DS	DS	R	DS	DS	N	N	S	S	S	S	
Nitric Acid	30%	N	N	R	N	N	N	N	S	S	S	DS	
Nitric Acid	40%	N	N	R	N	N	N	N	N	DS	S	N	
Nitric Acid	70%	N	N	D	N	N	N	N	N	N	N	N	
Nitric Acid	98%	N	N	N	N	N	N	N	N	N	N	N	
Oleic Acid		R	R	R	R	R	R	R	R	R	R	R	
Oxalic Acid	10%	R	R	R	R	R	R	R	R	R	R	R	
Peppermint Oil	100%	R	R	R	R	S	R	R	R	R	R	R	
Peracetic Acid, 39% in Acetic acid	3%	S	D	S	S	D	R	D	D	S	S	R	
Phenolic Paint stripper waste	1-5%	D	D	R	D			R	R			N	
Phosphoric Acid	7%	N	N	R	N	R	R	D	S	R	R	R	
Phosphoric Acid	25%	N	N	R	N	R	R	N	S	R	R	R	
Phosphoric Acid	85%	N	N	R	N	N	N	N	N	N	N	DS	
Phosphorous Trichloride	100%	N	N	D	N				R			N	
PM Solvent		N	N	D	N	R	R	D	R	S	D	N	
Polyester Resin		D	D	R	D				R			D	
Polyester resin in styrene		D	D	R	D				R			N	
Polyphosphates		R	R	R	R				R	R		R	
Potassium Cyanide		S	S	S	S				S			S	
Potassium Hydroxide	45%	R	R	R	R	R	R	DS	R	R	R	R	
Potassium Permanganate	solid	S	S	S	S			DS	S	S		S	
Propionic Acid	100%	D	D	R	D				R			N	
Propyl Acetate	100%	R		R		R	R	R	R	R	R	N	
Propyl Cellosolve		N	N	D	N			N	R	N			
Propylene Glycol		R	R	R	R	R	R	R	R	R	R	R	
Propylene glycol ether		N	N	R	N	R	R	D	R	D	D	R	
Red Wine Vinegar		R	S	S	DS	R	R	R	R	R	D	R	
Remedy		R	S	D	R	R	R	S	R	S	R	R	
Sani Clean		DS	S	S	DS	S	S	S	S	S	S	R	
Silver Cyanide		S	S	S	S				S				
Silver Nitrate	5%	S	S	S	S	S	R	S	R	S	S	S	
Silver Nitrate	20%	S	S	S	S	S	S	S	S	S	S	S	
Skydrol		D	D	R	D	R	DS	D	R		R	R	
Sodium Chloride		R	R	R	R	R	R	R	R	R	R	R	
Sodium Hydroxide	50%	R	R	R	R	R	R	N	R	R	R	R	
Sodium Hypochlorite, 10-15%	5%	R	R	R	R	D	R	R	R	R	R	R	
Sodium Hypochlorite, 10-15%	15%	D	D	R	D	D	R	D	R	S	S	R	
Sodium Hypochlorite, 10-15%	50%	D	D	D	D	D	R	D	R	S	S	R	
Sodium Hypochlorite, 10-15%	100%	DS	DS	D	D	D	D	D	R	S	S	R	
Sodium Persulfate		S	S	S	S				S	S		S	
Spartan, Inspector's Choice, 6ozs/gal	5%	R	S	R	S	R	R	R	R	R	R	R	
Spartan, Sparclean Sure Step, 2ozs/gal	1.50%	R	R	R	R	R	R	R	R	S	R	R	
Spearmint Oil		DS	D	R	D	S	S	N	R	S	N	N	
Spor-Klenz	0.30%	S	S	R	S	S	R	S	R	R	R	R	
Star San		DS	S	S	DS	S	S	S	S	S	S	R	
Stride		R	S	R	S	R	R	R	R	S	S	R	
Stoddard solvent		N	N	D	N				R	N		N	

Key: R = Resists degradation and staining S = Stains but resists degradation D = Degrades and stains unless cleaned from surface within 24 hours
 DS = Stains and must be cleaned from the surface within 24 hours to avoid coating degradation N = Not resistant - degraded the coating immediately

Dur-A-Flex Chemical Resistance Data

This data is based on the application of listed materials to the top surface of the flooring

Chemical Name	% Conc.	Epoxies				Urethanes					Acrylics	
		Dur-A-Gard	Glaze #4	Novolac	Ultra Clear	Armor Top	ACCELERA	Glaze #5	Poly-Thane 2 HS	Poly-Crete HF, MD, TF Plus	Poly-Crete Color Fast	MMA
Styrene		N	N	D	N				R	N		N
Sulfonic Acid	70%	N	N	DS	N	DS		N			N	
Sulfuric Acid	10%	S	S	S	S	S	S	S	DS	S	S	S
Sulfuric Acid	30%	N	N	S	N	DS	S	N	DS	S	N	S
Sulfuric Acid	50%	N	N	S	N	N	DS	N	DS	S	N	DS
Sulfuric Acid	98%	N	N	DS	N	N	N	N	N	N	N	N
Tannic Acid	20%	S	S	S	S				S	S		
Tartaric Acid	10%	R	R	R	R	R	R	R	R	R	R	R
Terpene Fraction of Spearmint Oil	100%	R	R	R	R	R	R	R	R	R	R	R
Toluol	100%	N	N	N	N				R		D	
Top Guard		R	D	R	S	R	D	D	R	S	S	R
Transmission Oil	100%	R	R	R	D	R	R	R	R	R	R	R
Trichloroethane (1,1,1)	100%	D	D	R	D				R			
Trichloroethylene	100%	N	N	N	N	R		N	R	N	D	
Triethanolamine (TEA)	100%	DS	DS	S	DS				DS	R		
Triethanolpentamine (TEPA)	100%	DS	DS	S	DS				DS			
Triethanoltetramine (TETA)	100%	DS	DS	S	DS				DS			
Turbo Charge II NP		R	R	R	R	R	R	R	R	R	R	R
Urine		R	R	R	R	R	R	R	R	R	R	R
Vesphene II ST	2 oz./2 gal. water	R	DS		DS	R	R	R	R	DS	DS	DS
White Vinegar		R	R	R	R	R	R	R	R	R	R	R
Virex		R	R	R	S	R	R	R	R	R	S	R
Vortexx (2600 ppm)		S	S	N	S	D	R	R	R	D	D	R
Water		R	R	R	R	R	R	R	R	R	R	R
Wine, Red		R	S	R	DS	S	R	R	R	R	S	R
Xylene		D	D	R	D	R	R	D	R	D	D	N

Key: **R** = Resists degradation and staining **S** = Stains but resists degradation **D** = Degrades and stains unless cleaned from surface within 24 hours
DS = Stains and must be cleaned from the surface within 24 hours to avoid coating degradation **N** = Not resistant - degraded the coating immediately

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. Coatings were tested using ASTM D1308 spot test covered method up to 7 days. Test results are valid only for the tested conditions and cannot accurately predict performance in actual use settings. Combinations of above substances were not tested with other substances and the effects of a combination of substances cannot be determined from these results. THE DATA ARE PROVIDED "AS IS," WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. THE ENTIRE RISK OF USE OF THE DATA SHALL BE WITH THE USER.
 Rev 170714



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
Sweep floor thoroughly	Broom, dust mop	Floor sweeper, broom
Apply cleaning product on floor surface	Deck brush, Foamer/sprayer	Automatic floor scrubber, Foamer/sprayer
Dwell – allow cleaning product time to emulsify foreign material	10 –15 minutes	10 –15 minutes
Agitate to aid in the release of foreign materials	Deck brush, Rotary floor machine	Automatic floor scrubber, Rotary floor machine
Remove cleaning product from the floor	Squeegee (soft neoprene) Wet vacuum	Automatic floor scrubber
Rinse 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.

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:

Application	Typical Areas	Product	Product Description
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

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:

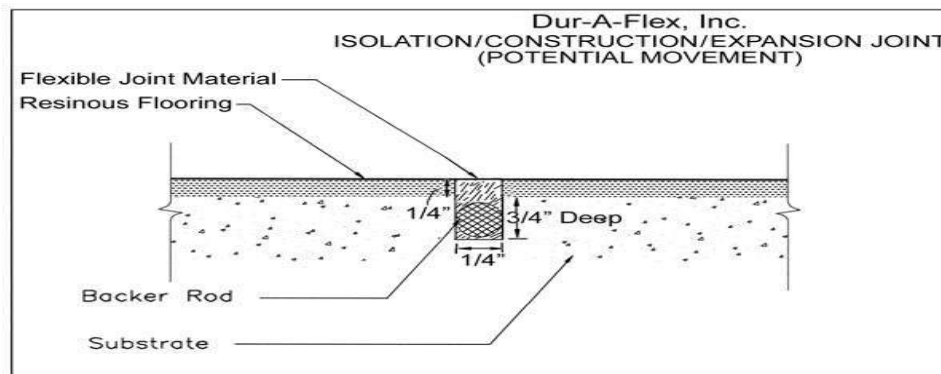
1. Application – Apply EZ-CLEAN at a 1:64 dilution rate with hot water while using a deck brush, foamer/sprayer or powerwasher.
2. Scrub walls with deck brush.
3. Rinse walls with clean water.

For further technical assistance regarding this guide, please call Dur-A-Flex, Inc. Technical Services at (800) 253-3539, or e-mail Contact_US@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.



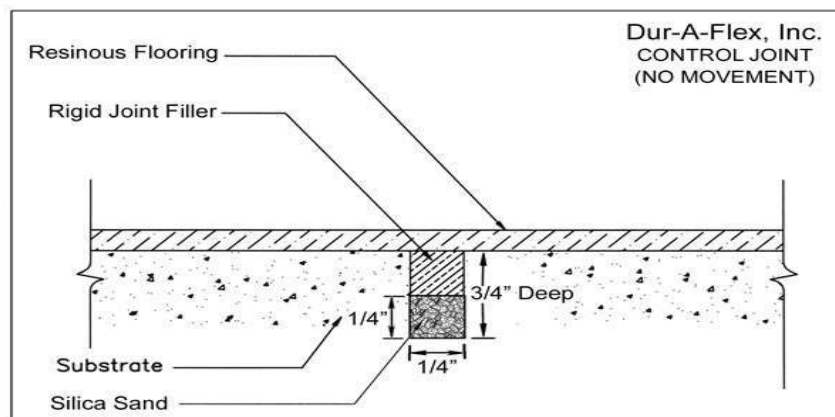
Prior to filling moving joints Dur-A-Flex, Inc. recommends "honoring" these joints by making a saw cut through the finished floor system at a depth of 3/4" deep and 1/4" wide with a diamond blade saw attached to a vacuum. A bond breaker such as backer rod (closed cell) must be added to the bottom of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

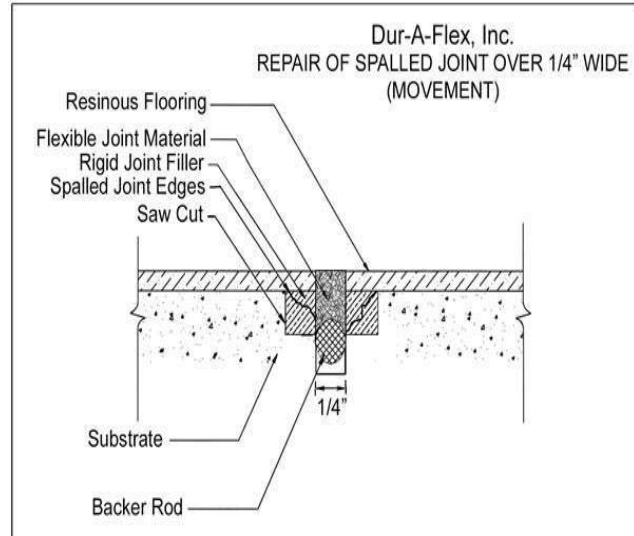
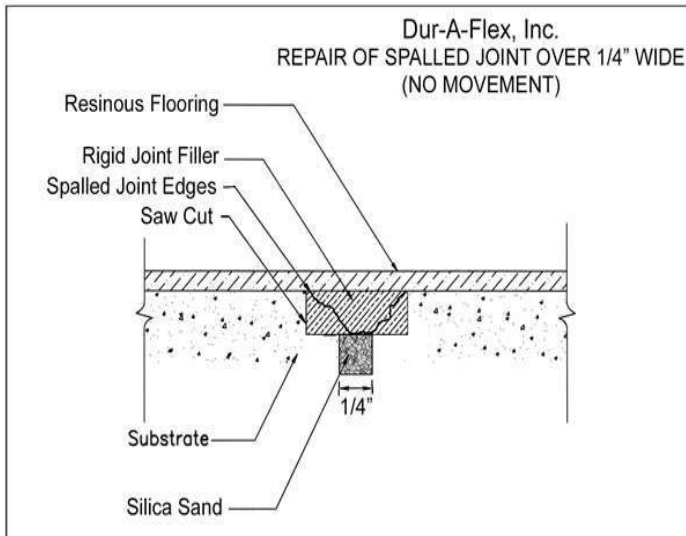
Control and or Contraction joints are considered non-moving joints which accommodate shrinkage and relieve internal stresses during the curing process of the concrete.



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"> 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) Poly-Crete HF, MD and SL flooring systems typically cover and fill this size crack/joint MMA flooring systems use MMA S/L Filler Mix 	<ul style="list-style-type: none"> Epoxy flooring systems use Glaze #4 with Dur-A-Crete. Poly-Crete flooring systems use Poly-Crete MD or WR MMA flooring systems use SL Filler Mix or Cryl-A-Tex.
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

Dur-A-Flex, Inc.

TERMS AND CONDITIONS OF SALE

1. **Contract Terms.** These Terms and Conditions of Sale (“Terms”) constitute the agreement between the parties, to the extent not prohibited by applicable law. Acceptance of Buyer’s order and all sales by Dur-A-Flex, Inc. (“DAF”) are expressly conditioned on these Terms. Buyer’s acceptance of products is agreement to these Terms . DAF hereby rejects all terms and conditions of Buyer. Modifications, including any terms and conditions in Buyer’s purchase order are not binding on DAF unless DAF agrees to the modifications in writing.
2. **Payment Terms.** Payment terms are net 30 days from the earlier of the date of invoice or date of shipment, unless specified otherwise. Goods exported from the USA may be subject to a down payment, with the balance payable through an Irrevocable Letter of Credit established through and confirmed by a bank acceptable to DAF. DAF shall have the right, in its sole discretion, to require payment before shipment or payment via letter of credit in the event that it determines that Buyer is delinquent in payment or will exceed credit limit. Overdue accounts shall bear simple interest at the rate of 1.5% per month (18% per annum) from the date of the invoice. Buyer shall pay all costs of collection of money due DAF, including attorney fees.
3. **Delivery Terms.** Delivery terms are F. O. B. DAF’s plant, unless specified otherwise. As a convenience, DAF may prepay freight charges, and such charges may be added to the Buyer’s invoice as a separate line item or reflected in the agreed price of the product. DAF may make partial shipments of Buyer orders, which shipments may be separately invoiced and shall be paid for when due, without regard to subsequent shipments. Delay in shipment or delivery of any particular portion of an order shall not relieve the Buyer of its obligation to accept the balance of the order. Regardless of the party paying freight charges, all risk of loss or damage in transit will be borne by the Buyer unless specified otherwise. Shipments shall be subject to overrun of 20% without penalty. Shipments of total quantities ordered must be taken within 10 business days of the order date, except that total quantities back-ordered are to be fully released and accepted within 6 months of the date of the order, unless otherwise agreed in writing. If not released as stated above, DAF reserves the right to charge all applicable and ancillary fees and/or carrying costs. Buyer agrees that an order shall in no event be subject to cancellation except by prior written consent of DAF, and then only when DAF is fully reimbursed for work performed, materials used and material which has been ordered specifically for Buyer’s order and cannot be returned.
4. **Delivery Dates.** Delivery dates are estimated at the date that DAF accepts the Buyer’s order. DAF shall endeavor to make deliveries within a reasonable time to the estimated delivery dates, but such dates are estimates of approximate dates of delivery, not a guarantee of a particular day of delivery. DAF shall not be liable to the Buyer for any damages, whether incidental, consequential or otherwise, for failure to fill orders, delays in delivery or any error in the filling of orders. Special or expedited delivery expenses will be charged to Buyer.
5. **Design Components.** It is the Buyer’s responsibility to approve colors and decoration at the DAF’s premises prior to commencement of a new production run, failing which the Buyer shall have no claim against the DAF for color variation or any other decoration defects whatsoever.
6. **Taxes.** Any tax imposed by Federal, State or other governmental authority on the sale of merchandise and service referred to in this order acknowledgment or invoice shall be paid by the Buyer in addition to the purchase price.
7. **Standard Warranty and Limitations of Remedies and Liability covering all DAFs’ goods.** Dur-A-Flex, as a manufacturer of goods, stands behind its products by warranting that, subject to the limitations below, for a period of 1 year from shipment, its products 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. If Dur-A-Flex determines a product does not meet this warranty, it will replace it, refund the purchase price or give a credit to the purchaser, at its sole option, as Buyer’s sole remedy.

Our products are intended for use by customers with skill in the industry. Technical recommendations on use of Dur-A-Flex products can only be based on present experience and knowledge and reliability of data provided regarding a site. However, many factors beyond the control of Dur-A-Flex can affect the products. Thus, customers must satisfy themselves of suitability of the product for site conditions.

Dur-A-Flex is not an installer and therefore does NOT warrant or guarantee:

1. The work of any person or company installing its goods;
2. Failure of the product due to an installer not following the product Application Instructions;
3. Failure of the product due to improper design by the engineer or architect;
4. Failure of the product due to misuse, abuse, alteration, improper storage or handling, or not using or cleaning the product in the manner in which it was intended and in accordance with instructions provided by Dur-A-Flex;
5. Bond failure of the product caused by deficiencies in the substrate including, but not limited to, the presence of ionic compounds or soluble salts, alkali silicate reaction, alkali aggregate reaction, shale-pop, and other expansive reactions of aggregates and reinforcements;

Dur-A-Flex, Inc.

TERMS AND CONDITIONS OF SALE Cont'd

Dur-A-Flex's sole liability, and Customer's exclusive remedy, for breach of any warranty as expressly limited, at Dur-A-Flex'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 Dur-A-Flex within sixty (60) days of observation and no more than one (1) year after delivery of the product. Dur-A-Flex 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.

DUR-A-FLEX MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. DUR-A-FLEX SHALL NOT BE LIABLE FOR, and CUSTOMER WAIVES ALL CLAIMS FOR, PROSPECTIVE PROFITS OR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR ANY OTHER DAMAGES OR REMEDIES NOT SPECIFICALLY PROVIDED ABOVE, WHETHER BASED ON NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY IN TORT OR ANY OTHER CAUSE OF ACTION. ALL WARRANTIES ARE NULL AND VOID IF CUSTOMER HAS NOT PAID IN FULL IN ACCORDANCE WITH DUR-A-FLEX'S PAYMENT TERMS.

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.

8. Specifications. Buyer accepts DAF's standard product specifications. Buyer waives all claims relating to products sold by DAF unless notice thereof is received in writing by the DAF within 30 days after delivery of the products which are the subject of the claim(s). In no event shall DAF be liable for any defective good if examination discloses that the good has been taxed beyond its normal capacity or the defective condition of such good was caused by misuse, abuse, improper installation or application, improper maintenance or repair, alteration, accident or negligence in use, storage, transportation or handling.
9. Safety. USE OF THE GOODS OR MERCHANDISE SUPPLIED BY DAF IN OR WITH SUBSTANCES WHOSE CHEMICAL OR OTHER COMPOSITION OR CHARACTERISTICS ARE INCOMPATIBLE WITH SUCH GOODS OR MERCHANDISE IS A MISUSE BY BUYER OF SUCH GOODS OR MERCHANDISE. ALL RESPONSIBILITY TO TEST AND OTHERWISE ASSURE COMPATIBILITY IS ASSUMED BY THE BUYER, WHETHER OR NOT DAF MAY PERFORM ANY TESTS FOR COMPATIBILITY (WHICH TESTING IS NOT A DUTY OF DAF) AND REGARDLESS OF THE RESULTS OF ANY SUCH TEST, DAF MAKES NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, THAT ANY TESTS BY DAF ARE ADEQUATE OR SUFFICIENT FOR BUYERS PURPOSES, AND BUYER AGREES NOT TO HOLD DAF RESPONSIBLE FOR SUCH ADEQUACY OR SUFFICIENCY. Upon request by Buyer, DAF will provide applicable information (including but not limited to Material Safety Data Sheets) concerning the safety and health aspects of its goods. Buyer agrees to communicate such information to Buyer's employees, agents, contractors and customers, and to require such persons to further communicate such information to all persons that they may reasonably foresee will be exposed to or handle such goods.
10. Non-conforming Goods. If Buyer provides DAF with notice within ten (10) days of learning of a possible warranty breach and reasonable opportunity to inspect: DAF may, at its option, either repair or replace said nonconforming goods or repay the price thereof. If DAF requests the return of the nonconforming goods, no obligation for breach of warranty shall arise unless the goods have been returned to DAF within thirty (30) days after such request is made. Buyer's failure to provide timely notice shall constitute a waiver of its claims. The aforesaid obligations of DAF to repair or replace defective or nonconforming goods or repay the purchase price thereof is expressly agreed by the parties to be the limit of DAF's liability and Buyer's sole and exclusive remedy for warranty.
11. Damages. IN NO EVENT WILL DAF BE LIABLE FOR LOSS OF USE OR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OR EXPENSE ARISING IN CONNECTION WITH THIS ORDER. DAF's maximum liability shall not in any case exceed the contract price for the goods claimed to be defective or unsuitable.
12. Indemnification. BUYER ASSUMES ALL RISKS AND AGREES TO INDEMNIFY AND HOLD DAF HARMLESS AGAINST ALL CLAIMS AND LIABILITY (INCLUDING LIABILITY BASED ON A CLAIM THAT DAF IS NEGLIGENT OR STRICTLY LIABLE) ARISING AS A RESULT OF USE OR POSSESSION OF THE GOODS SUPPLIED UNDER THE TERMS OF THIS CONTRACT. Any advice furnished by DAF, as to any use of the goods by Buyer, is offered "as is" without warranty of any kind, is gratuitous and shall not affect the limitations on DAF's warranties or Buyer's agreement to indemnify. Buyer acknowledges that this Agreement is for the purchase of goods, not services, and that DAF shall therefore have no liability to Buyer for any harm or loss caused by advice received by Buyer from any of DAF's agents or employees. If a claim is brought against DAF by an agent or employee of Buyer, Buyer agrees to defend, indemnify and hold DAF harmless from and against any and all liability, loss, damages, and expense relating to the claim.

Dur-A-Flex, Inc.

TERMS AND CONDITIONS OF SALE Cont'd

13. Setoff. DAF shall have the right to set-off all amounts due to it against payments owed by it whether arising out of this or any other contract between DAF and Buyer, its subsidiaries, or affiliates.
14. Force Majeure. Neither party shall be liable to the other party or any other person for any failure or delay in the performance of any obligation hereunder, except for payment obligations, due directly or indirectly to events beyond its reasonable control, including but not limited to, fire, storm, flood, earthquake, explosion, accident, acts of the public enemy, terrorism, wars, riots and public disorders, epidemics, sabotage, strikes, lockouts, labor disputes, labor shortages, work slowdowns, stoppages or delays, shortages, embargoes or failure or delay of energy, materials, decoration, art work, printing plates, supplies or equipment, transportation embargoes or delays, Acts of God, breakdowns in machinery or equipment, acts or regulations or priorities of federal, state, provincial, or local governments or branches or agencies thereof, and government contracts or shipments to fulfill government contracts.
15. Entire Agreement, Governing Law. There are no terms or conditions with respect to this contract, which are not specified herein. These terms and conditions constitute the complete and exclusive agreement between the parties concerning the subject matter thereof and supersede all prior representations, statements and promises made by DAF which are not expressly stated herein. Irrespective of the place of execution or performance the purchase order shall be governed by and construed in accordance with the laws of the State of Connecticut and all actions arising out of this contract shall be brought in the State of Connecticut.
16. Price Changes. Notwithstanding the price on the order, DAF reserves the right to modify the price in accordance with any change in labor, applicable law, exchange rate for exports, fuel surcharges where DAF pays for shipping or raw material costs, which have been instituted at or before the date of shipment. Where packaging other than standard packaging is necessary, the expense will be charged to the Buyer. DAF reserves a security interest in any goods sold to the extent of the invoiced amount to secure payment of Buyer's obligation. If Buyer defaults, it agrees to make the goods available so that DAF may peaceably repossess. A copy of the invoice may be filed with the appropriate office at any time as a financing statement. At DAF's request, Buyer will execute any instrument DAF requires to perfect its security interest.
17. Returns. Product returns will not be accepted for replacement or credit without prior written authorization from DAF and a returned material authorization (RMA) number, in accordance with DAF's current return policy. A return authorization number must be requested from DAF through the Regional Sales Manager. Merchandise returned is not to exceed the quantity authorized. A minimum 20% restocking fee will be applied. All returns must have freight prepaid. No cash on delivery for freight will be accepted. Credit will be issued only after merchandise is inspected by DAF. Damaged, opened or partially used products will not receive credit. Materials returned beyond 90 days of original ship date will not receive credit. Custom colors, pigmented MMA and Poly-Crete Aggregates are not eligible for return. Credit will not be issued for returns without an RMA number displayed on the pallet and bill of lading.
18. Credit. All orders are subject to approval of the credit department. DAF shall have the right, at DAF's sole discretion, to modify, change or withdraw credit terms at any time without notice and to request guarantees, security or payment in advance for any order or from any Buyer.
19. Nondisclosure. All non-public information provided by DAF to Buyer ("Information") shall be DAF's exclusive property. Information shall be used by Buyer only for installation of DAF products, kept confidential, and returned promptly at DAF's request. Buyer shall not disclose Information to third parties without DAF's consent. These obligations shall survive the cancellation/termination/completion of the sale.
20. Intellectual Property. DAF retains its intellectual property rights, title and interest in and to trademarks, trade names, logos, copyrights, patent rights, trade secrets and other proprietary rights ("IP"). Purchaser obtains no license under Seller's IP (other than as necessary to apply the Products) or any rights to use, or make any representations regarding, any of Seller's IP. Purchaser has no rights to sublicense or otherwise transfer any of Seller's IP rights to third parties. Purchaser shall not disparage any of Seller's IP rights.
21. **GENERAL** (a) Assignment and Delegations: Buyer will not assign any rights or delegate any duties under the Agreement without the written consent of DAF. (b) Statute Of Limitations: any action of any kind under this contract must be brought within one (1) year of the date of delivery. (c) Modification and Termination: This contract shall not be modified or terminated unless expressly agreed by both parties in writing. No waiver or any default hereunder shall be deemed a waiver of the obligation of future compliance, and any provision waived shall remain in full force and effect. In addition to its other remedies, DAF may cancel any unfulfilled part of the contract without any liability and without notice if Buyer fails to pay amounts due or Buyer shall become bankrupt, insolvent, makes an assignment for the benefit of creditors or a receiver is appointed for Buyer, or Buyer is acquired or sold in whole or in part. (d) Sole Agreement: Unless otherwise agreed in writing, this constitutes the entire agreement between DAF and Buyer, and supersedes any previous agreement, representation or warranty, whether express or implied, regarding the goods. Buyer acknowledges that no representations, understandings, conditions, or agreements have been made or relied upon other than those specifically stated in this Agreement.

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