



SUBMITTAL COVER SHEET

From: Tyler O'Neill Attn: Tim Brown
 Company: Piazza, Inc. C&S Companies
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 Project: Dutchess Stadium Syracuse, NY 13212
 Project #: RFB-DCB-18-22 (315) 455-2000; Fax: 455-9577

Reference: CSI Code: 096723 Dwg No: _____
 Paragraph: _____ Other: _____

Description: HybriFlex Resinous Flooring Product data

Supplier: Mackenzie

Manufacturer: DuraFlex

Item Type: Product Data _____ Manf. Cert/Warranty
 Shop Drawings _____ Samples
 Other: _____


Contractor's Approval:

_____ Reviewed for general compliance of specifications.
 _____ This submittal is a **substitute** to the specified product.
 _____ For Architects / Engineers Approval
 This is our _____ submittal for this item.
 We are submitting _____ copies.

Contractor Submittal Review Stamp

THE ATTACHED MATERIAL HAS BEEN REVIEWED BY THE UNDERSIGNED AND IS BELIEVED TO COMPLY WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE UNDERSIGNED UNDERSTANDS VERIFICATION OF FIELD DIMENSIONS, AND COORDINATION WITH OTHER TRADES, REMAINS THE RESPONSIBILITY OF THE CONTRACTOR.

Submitted by: Piazza, Inc.
Digitally signed by Piazza, Inc.
 DN: C=US, E=tyler@piazza.com,
 OU=Piazza, Inc., O=Piazza, Inc.,
 CN=Piazza, Inc.
 Date: 2023.03.15 15:04:38-04'00'
 Date: 06/28/2023



REVIEWED
 REVIEWED – ADDITIONAL INFORMATION REQUIRED
 FURNISH AS CORRECTED
 REVISE AND RESUBMIT
 REJECTED
 NOT REVIEWED

This review is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of submittals is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of equipment or systems, which are the Contractor's responsibility. The Architect's review shall not constitute approval of safety precautions or construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. The Architect's comments, notes or corrections are not an authorization to proceed with Work involving a change in the Contract Sum, the Contract Time or both. If any portion of this review requires a change to the Work, an appropriate change instrument must be executed in accordance with the Contract Documents.

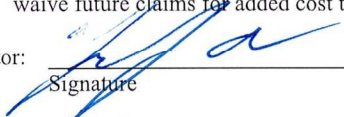
DLR Group
 Date: 07/16/2023
 By: ASchmidt

**CONTRACTOR'S STATEMENT OF CONFORMANCE
OF PROPOSED SUBSTITUTION TO CONTRACT DOCUMENTS
MUST BE SUBMITTED WITH FORM 012500A REQUEST FOR SUBSTITUTION**

Email in single file PDF format to Construction Manager with Form 012500A and supporting data

I / We have investigated the proposed substitution. I / We

1. believe that it is equal or superior in all respects to the originally specified product, except as stated in Paragraph C of Form 012500A Request for Substitution Form;
2. will provide the same warranty as required in AIA A201 General Conditions and technical specifications;
3. will provide the same special warranty or guaranty as specified;
4. have included all cost data and cost implications of the proposed substitution;
5. will pay redesign and special inspection costs caused by the use of this product;
6. will pay additional costs to other contractors caused by the substitution;
7. will coordinate the incorporation of the proposed substitution in the Work;
8. will modify other parts of the Work as may be needed, to make all parts of the Work complete and functioning;
9. waive future claims for added cost to Contractor caused by the proposed substitution.

Contractor:  6/28/23
Signature Date
Mackenzie Service 203-380-9000
Firm Telephone
60 Mead Street
Address
Stratford , CT 06615
City, State Zip

ARCHITECT/ENGINEER'S REVIEW AND ACTION

- Provide more information in the following categories. Resubmit.

- Sign Contractor's Statement of Conformance. Resubmit.
- The proposed substitution is approved with the following conditions:

- The proposed substitution request is rejected.

The following changes will be made by Change Order:

Addition to / deduction from the Contract Sum: \$ _____

Addition to / deduction from the Contract Time: _____ days.

DLR Group

By: _____ Date: _____
Architect



HYBRI-FLEX EB SYSTEM

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HYBRI-FLEX EB

DESCRIPTION

HYBRI-FLEX EB is a solid color, natural quartz system. It is composed of a 1/8" POLY-CRETE SL body coat with a natural quartz broadcast; followed by a SHOP FLOOR broadcast coat and a SHOP FLOOR grout coat. The system is finished with a pigmented ARMOR TOP topcoat yielding a total nominal system thickness of 3/16" - 1/4".

BENEFITS

- VOC Compliant
- ADA Compliant
- Contributes to LEED Credits
- Meets USDA, FDA and CFIA Standards
- Hygienic - Does Not Harbor Bacteria
- High Chemical Resistance
- High Abrasion Resistance
- Self-Priming for Most Applications
- Wide Service Temperature Range
- Can Be Applied To 5-7 Day Old Concrete

LIMITATIONS

This product is best suited for application in temperatures between 60°F and 85°F. Substrate must be clean, sound and dry.

IMPORTANT: POOL DECK APPLICATIONS

When used for pool deck applications, only the **standard slip-resistant texture** should be used. A 4' x 4' test patch for customer approval prior to installation is highly recommended. Every pool deck installation **must** be registered with a Dur-A-Flex, Inc. Sales representative at the completion of installation and before the pool deck is open for use. These forms can be found in the Technical Catalog in the Master Documents section or in the Contractor Center on our website.

TYPICAL USES

HYBRI-FLEX EB is designed to be installed over concrete, and is unaffected by thermal cycling.

- Pharmaceutical Plants
- Manufacturing Areas
- Warehouses
- Main Traffic Aisles
- Automotive Service Areas
- Pool Decks

COLORS

HYBRI-FLEX EB is available in variety of colors. Please refer to the Standard Color Chart on our website. Custom colors are available upon request.

PACKAGING / STORAGE CONDITIONS

POLY-CRETE SL is available in pre-measured kits that consist of resin, hardener and aggregate. SHOP FLOOR is available in 1 and 5 gallon cans and 50 gallon drums. ARMOR TOP hardener is provided in 1-gallon cans and the resin is provided in 1-quart cans.

HYBRI-FLEX EB components must be stored dry. Do not allow resins to freeze. Do not store near open flame or food. The shelf life of this product is 6 months from ship date in the original unopened container.

SURFACE PREPARATION

This product requires preparation in order to perform as expected. Surface must be profiled, clean, dry, oil free and sound. Please refer to the Surface Preparation Guide on our website for more information.

APPLICATION METHOD

POLY-CRETE SL is applied to a properly prepared area at the required thickness using a "V" notched squeegee. The freshly placed material is then loop rolled into which the proper size quartz aggregate is broadcast to excess to achieve the desired profile. Allow a minimum of 6 hours for the Base Coat to cure before sweeping, sanding or vacuuming. Apply SHOP FLOOR to deliver second broadcast and as a grout coat over the second broadcast. Finish with a top coat of pigmented ARMOR TOP. See Application Instructions on our website for a detailed installation procedure.

GUIDE SPECIFICATIONS

This product is part of the DUR-A-FLEX family of polymer systems. Please contact DUR-A-FLEX for complete three part guide specs.

GUIDE SPECIFICATIONS

This product is part of the DUR-A-FLEX family of polymer systems. Please contact DUR-A-FLEX for complete three part guide specs.

CHEMICAL RESISTANCE

HYBRI-FLEX EB has excellent resistance to organic and inorganic acids, alkalis, fuel and hydraulic oils, as well as aromatic and aliphatic hydrocarbons. Contact the Dur-A-Flex Technical Department for questions about specific chemicals.

MOISTURE CONCERNS

Normal limits for moisture vapor transmission for Hybri-Flex floor systems are 20 lbs./1,000 sq. ft./24 hour using the calcium chloride test per ASTM F-1869 or 99% relative humidity using in-situ Relative Humidity Testing per ASTM F-2170. Please refer to the Floor Evaluation Guidelines on our website for complete details.

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.

JOINT GUIDELINES

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

CLEANING

Regular scrubbing will maintain these systems in serviceable condition. However, certain textures and service environments require specific procedures. Please refer to the master Cleaning Guide on our website for more information.

CAUTION

Read, understand and follow Material Safety Data Sheets and Application Instructions of this flooring system prior to use. Follow the Hazardous Materials Identification System labeling guide for proper personal protective equipment to use when handling this product. Use only as directed.

HYBRI-FLEX EB

TECHNICAL INFORMATION

Physical Property	Test Method	Result
Hardness (Shore D)	ASTM D-2240	75-80
Compressive Strength	ASTM D-695 ASTM C-579	17,500 psi 12,500 psi
Tensile Strength	ASTM D-638	7.50%
Flexural Strength	ASTM D-790 ASTM C-580	6,250 psi 4,500 psi
Flexural Modulus of Elasticity	ASTM D-790	6.2 x 10 ⁵
Linear Expansion	ASTM D-696	2 x 10 ⁻⁵
Bond Strength to Concrete	ASTM D-4541	400 psi substrate fails
Indentation	MIL D-3134	.025 MAX
Impact Resistance	ASTM D-2794	>160
Water Absorption	ASTM D-570	0.04%
Heat Resistance Limitation		140°F - 200°F
Flammability	ASTM D-635	Self Extinguishing
Critical Radiant Flux	ASTM E-648	Class I
Noise Reduction Coefficient	ASTM C-423	0.05
Taber Abrasion Resistance A&B	ASTM D-4060, 1000g load, 1000 cycles, CS-17 wheel after full cure	Gloss Finish Satin Finish w/grit - 4 mg loss w/grit - 8 mg loss no grit - 10 mg loss no grit - 12 mg loss
Static Coefficient of Friction*	ANSI B101.1	>0.6
Dynamic Coefficient of Friction - Wet*	ANSI A326.3	>0.42
VOC Content		80-90 g/L

*Dur-A-Flex flooring systems can be built to meet or exceed the requirements of Static or Dynamic Coefficient of Friction testing per installation. Contact your Dur-A-Flex territory sales manager or tech representative for more information on alternative textures, grit/grip additives, or smooth coatings for your specific environment. A sample should always be obtained and tested prior to purchase for any non-slip flooring system.

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

HYBRI-FLEX EB

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.

SYSTEM OVERVIEW

HYBRI-FLEX EB is a solid color, natural quartz system composed of a 1/8" POLY-CRETE SL body coat with a natural quartz broadcast. It uses a SHOP FLOOR broadcast coat, a SHOP FLOOR grout coat, and a pigmented ARMOR TOP topcoat yielding a total nominal system thickness of 1/4".

SURFACE PREPARATION

Surface should be profiled, clean, dry, oil free and sound. Shot Blasting is the preferred preparation method. Please refer to the master Surface Preparation Guide on our website for more information. Never feather edge HYBRI-FLEX EB, always terminate in a keyway groove at doorways, drains and exposed edges. No epoxy coatings should be applied unless surface temperature is a minimum of 5 degrees F above dew point. See Dew Point Calculation Chart on our website for detailed instructions.

MOISTURE CONCERNS

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

MIXING AREA

Select a convenient mix area and protect the surface from spillage by covering with a sheet of plastic and a layer of cardboard. Be generous with the amount of space allocated for this function. The more comfortably your mixer works, the less likely you are to have a "mix error". Please refer to our Mix Station video on our website for more information.

STORAGE CONDITIONS

POLY-CRETE SL must be stored dry. Exposure of the aggregate to moisture for an extended period will cause lumps. Do not allow resins to freeze. The shelf life is 6 months from the ship date in the original unopened container. Products must be stored in temperatures no less than 60°F and no greater than 85°F.

JOINT GUIDELINES

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

APPLICATION METHOD

Proper planning is essential for satisfactory appearance of the finished floor. Lay out installation in sections to allow full width to be finished in 20 minutes (@70°F) or less to assure absence of placement lines.

NOTE: For each application of material and before mixing, mark your batches to ensure you achieve your spread rate targets. This is best accomplished by dividing your target spread rate by the width of the area being coated (or your planned wet edge). Example: If your spread rate is 100 square feet and your area is 20 feet wide you would make a mark every 5 feet (100 divided by 20 = 5).

PRIMER

In most applications HYBRI-FLEX EB does not require a primer. However, very porous substrates should be primed first with POLY-CRETE TF.

- A. POLY-CRETE TF is supplied in pre-measured units consisting of one pail of resin, one container of hardener and one bag of aggregate (powder).
- B. Pour resin into the 2 gallon mix container.
- C. Scrape the sides of the resin container with a paint stick making sure no amount of residue remains.
- D. Wipe excessive material from paint stick on rim of resin bucket – DO NOT wipe excessive material from stick on the rim of the mixing bucket.
- E. Add hardener, same as steps C and D, scrape the sides of the bucket.
- F. Use a High Speed Drill with a 5-inch Jiffler blade.
- G. Thoroughly mix resin and hardener for 30 seconds.
- H. To avoid any possible clumping, add POLY-CRETE TF PLUS Aggregate while mixing the resin and hardener.
- I. Thoroughly mix resin, hardener and aggregate for 60 seconds.
- J. Make sure there are no clumps in the mixed materials.
- K. Pour the entire mixed material onto the floor in 4-inch ribbons.
- L. Scrape out all mixed material with paint stick and do not leave any residue in mix bucket.
- M. Spread with a 1/8-inch notched squeegee east to west and apply the material uniformly at 90 SF @ 8 mils

thickness. When moving east to west move squeegee in a continuous semi-circular motion.

- N. Wet out rollers in a puddle prior to using. Back roll north to south to level the material.
- O. Cross roll east to west to eliminate any roller lines overlapping 4-inches in between each cross roll.

BASECOAT

- A. POLY-CRETE SL is supplied in pre-measured units consisting of one pail of resin, one container of hardener and one bag of aggregate (powder). Pour the POLY-CRETE SL resin into a metal 5-gallon pail; scrape bottom and sides with a mix stick to assure that all material is transferred to the mix bucket. Use the Poly-Crete pail to scrape the mix stick, never scrape mix stick on the side of the mix pail. Pour all of the POLY-CRETE SL hardener into the center of the mix bucket. (If using POLY-CRETE NATURAL SL with pigment add the pigment to the resin and hardener.) Next, using a ½" 850 RPM drill with a 4" dispersion blade, mix the resin and hardener for 30 seconds. Slowly add the POLY-CRETE SL aggregate to the resin and hardener and mix at 850 RPM for 1 minute. **PRODUCT MUST BE MIXED WITH A 4" DISPERSION BLADE AND A ½" VARIABLE SPEED 850 RPM DRILL. *DO NOT ADD HARDENER TO RESIN UNTIL BATCH IS READY FOR MIXING*. *FAILURE TO ADD ALL POLY-CRETE SL AGGREGATE WILL RESULT IN IMPROPER CURE OF MATERIAL***
- B. Pour the entire batch onto the floor and spread with a ½ V notched squeegee. Each kit of POLY-CRETE SL will yield 55 Sq. Ft. per kit. Check squeegee every 1,000 sq feet for wear. Have new squeegee ready to avoid interruption in the process.
- C. Use a flat trowel to cut in edges, drains and around equipment. For continuity of finish and to ensure that new batches of material are blended together without transition lines, use even pressure and trowel at a low angle using a sweeping motion.
- D. To remove squeegee lines and help the material level, immediately Loop Roll the material after it has been placed. The material should be rolled straight forward and back picking up the roller with each pass; this will avoid leaving divots in floor. After the squeegee lines have been removed, the floor should be cross rolled side to side along the entire wet edge. The final cross roll should be completed within 12 minutes of mixing the product at 70°F.
- E. Wear spiked shoes while broadcasting aggregate up into the air and let it fall onto the floor. Make sure the broadcast is dispersed evenly over the entire floor area at a rate of 0.8lbs per square foot. Do not roll or walk back into areas that have been broadcast. Allow POLY-CRETE SL to cure for a minimum of 6 hours @ 70°F. At 70°F, broadcasting should not begin until 15 minutes after the time the Poly-Crete SL was mixed. This time varies depending on temperature. Broadcasting needs to be completed within

30 minutes of mixing.

- F. Use a stiff bristle broom to sweep off excess aggregate. Use a vacuum to remove chips around the edges and corners that are not accessible with a broom.

SECOND BROADCAST

- A. Measure out 1 part DUR-A-GLAZE #4 Regular or FAST hardener, and 2 parts SHOP FLOOR Resin. First add the hardener into a separate mixing pail and then add the resin. Scrape the bottom and sides with a mix stick to ensure that all material is transferred to the mix bucket. Use the measuring pail to scrape the mix stick, and never scrape the mix stick on the side of the mix pail.
- B. Using a ½" 450 RPM drill with a Jiffler blade, mix the resin and hardener for 2 minutes. ***DO NOT ADD RESIN TO HARDENER UNTIL BATCH IS READY FOR MIXING***
- C. Pour a 4" to 6" ribbon along the starting area. Use a 3" chip brush to cut in along edges, doorways, and drains.
- D. Using a 12" flat soft rubber window squeegee pull the material from side to side overlapping passes every 6". Be careful not to leave any puddles. SHOP FLOOR is applied at 90 Sq. Ft. per gallon over Flintshot and 50 Sq. Ft. per gallon over Q-Rok.
- E. Wear spiked shoes and back roll the material against the squeegee lines with a high quality 3/8" nap roller.
- F. Cross roll the material from side to side while overlapping the previous pass with half the roller width.
- G. Broadcast aggregate up into the air and let it fall onto the floor. Make sure the broadcast is dispersed evenly over the entire floor area at a rate of 0.5lbs per square foot. Do not roll or walk back into areas that have been broadcast. Allow to SHOP FLOOR to cure for 4 hours @ 70°F.
- H. Use a stiff bristle broom to sweep off excess aggregate. Use a vacuum to remove sand around the edges and corners that are not accessible with a broom.

GROUT COAT INSTRUCTIONS

- A. Measure out 1 part DUR-A-GLAZE #4 REGULAR hardener, and 2 parts DUR-A-GLAZE SHOP FLOOR Resin. First add the hardener to a separate mixing pail, and then add the resin. Scrape bottom and sides with a mix stick to assure that all material is transferred to the mix bucket. Use the measuring pail to scrape the mix stick, never scrape mix stick on the side of the mix pail.
- B. Using a ½" 450 RPM drill with a Jiffler blade, mix the resin and hardener for 2 minutes. ***DO NOT ADD RESIN TO HARDENER UNTIL BATCH IS READY FOR MIXING***
- C. Pour a 4 to 6" ribbon along the starting area. Use a 3" chip brush to cut in along edges, doorways, and drains.
- D. Using a 12" flat soft rubber window squeegee pull the material from side to side overlapping passes every 6". Be careful not to leave any puddles. SHOP FLOOR is applied at 90 Sq. Ft. per gallon over Flintshot and 50 Sq. Ft. per gallon over Q-Rok.

- E. Wear spiked shoes and back roll the material against the squeegee lines with a high quality 3/8" nap roller
- F. Cross roll the material side to side overlapping the previous pass with half the roller width. Allow Product to cure for 10 hours @70°F.

- D. If recoating over 24 hours, sand floor using at least a 60 grit screen, solvent wipe and apply SHOP FLOOR epoxy with SUPER STICK additive at recommended rate. Re-apply ARMOR TOP next day.

TOPCOAT INSTRUCTIONS - (ARMOR TOP)

ARMOR TOP TOPCOAT
SPREAD RATES

Gloss Clear (w/grit)	= 575 SF/kit
Gloss Clear (no grit)	= 550 SF/kit
Gloss Pigmented (w/grit)	= 700 SF/kit
Gloss Pigmented (no grit)	= 675 SF/kit
Satin Clear (w/grit)	= 775 SF/kit
Satin Clear (no grit)	= 750 SF/kit
Satin Pigmented (w/grit)	= 850 SF/kit
Satin Pigmented (no grit)	= 825 SF/kit

NOTE: Armor Top is sold in kits only. Spread rates vary due to differences in gloss and satin kit sizes.

- A. Pour 1 gallon of ARMOR TOP hardener into a 2 gallon bucket. Add 1 Quart of ARMOR TOP Colorant and mix for 30 seconds. Add 1 Quart of ARMOR TOP resin and mix for 30 seconds. If additional abrasion resistance is required, slowly add 1 pint of ARMOR TOP 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.
- B. Dip roller cover into paint tray and roll off excess. Apply two 8-10 foot long paths from left to right then right to left. Re-wet roller and continue application. Even out roller lines by using W shaped crosses and/or up & down passes. If not even, re-roll up and down until uniform. A final cross-roll is necessary to even out roller lines. Make sure to complete this roll within 10 minutes of the coating being placed.
- C. To prevent settling of the grit/powder, occasionally remix ARMOR TOP in a tray or bucket with a stick. Dry time is dependent on humidity as well as temperature.

NOTE: This product is best suited for application in temperatures between 60°F and 85°F. Full chemical and abrasion resistance occurs in 7 days at 70°F. At lower temperatures these properties will be attained more slowly. Protect floor from chemical exposure and abrasive wear during this time.

IMPORTANT!

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

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

CAUTION! 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.

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

SHOP FLOOR

DESCRIPTION

SHOP FLOOR Epoxy Flooring is a combination of pigmented DUR-A-GLAZE SHOP FLOOR, a 100% solids epoxy and Flintshot, a natural quartz sand. The epoxy and the quartz aggregate are fused together during application into a monolithic surface that is extremely durable, thickness ranges from 1/16"-1/4". SHOP FLOOR Epoxy Flooring is similar in application technique, durability and chemical resistance to the time tested DUR-A-QUARTZ Epoxy Flooring. It is available in three different textures; standard non-skid, orange peel and smooth.

BENEFITS

- Low Odor
- Meets USDA, FDA, OSHA standards
- Superior Adhesion
- Superior Chemical Resistance
- Easy Maintenance

LIMITATIONS

This product is best suited for application in temperatures between 60° F and 95° F. Substrate must be clean, sound and dry.

LIGHT COLOR SHOP FLOOR MUST BE APPLIED OVER A PIGMENTED PRIMER, MATCHING BROADCAST, AND/OR PIGMENTED GROUT COAT - FAILURE TO DO SO WILL RESULT IN BLOTCHY OR STREAKY COLOR OF THE FINAL SYSTEM.

TYPICAL USES

SHOP FLOOR Epoxy Flooring is designed for use wherever USDA, OSHA, FDA and EPA standards must be met. It can be applied on most sound substrates including concrete, quarry tile, brick pavers, plywood floors, etc. It is ideally suited for heavy-duty industrial applications, particularly in areas requiring durability, easy maintenance, a high degree of sanitation, and high acid and chemical resistance. SHOP FLOOR Epoxy Flooring will protect a new concrete floor from industrial abuse and harsh chemical spillage, and it will restore deteriorated concrete into a better than new condition. Typical areas of application:

- Laboratories
- Traffic Aisles
- Machine Shops
- Walk In Coolers
- Clean Rooms
- Manufacturing Areas
- Fire Stations
- Pharmaceutical Plants
- Mechanical Rooms
- Animal Care Areas

COLORS

SHOP FLOOR is available in 15 standard colors. The color *White* is only available for use with the DUR-A-GARD S/L 100 mil system. Please refer to the Standard Color Chart on our website. Custom colors are available upon request.

PACKAGING

SHOP FLOOR is available in 1-gallon cans, 5-gallon pails, and 50-gallon drums. Flintshot quartz sand is available in 50 lb bags.

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-SHIELD, DUR-A-GLAZE WB PRIMER, DUR-A-GLAZE MVP, or ELAST-O-COAT. Please refer to the Surface Preparation Guide on our website for more information.

APPLICATION METHOD

SHOP FLOOR is applied by the broadcast method. When recommended spread rates are followed, a Flintshot double broadcast produces a nominal 1/8" thick finish. See the full Application Instructions for further details on installation.

GUIDE SPECIFICATIONS

This product is part of the DUR-A-FLEX family of polymer systems. Please contact DUR-A-FLEX for complete three part guide specs.

DRAWINGS AND DETAILS

Standard CAD drawings and details are available for coves, drains, breaches, transitions, etc.

JOINT GUIDELINES

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

MOISTURE CONCERNS

Please refer to the Floor Evaluation Guidelines at www.dur-a-flex.com for complete details.

CHEMICAL RESISTANCE

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

CLEANING

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

DUR-A-GLAZE #4 “Water Clear” - Ideal for top - coating quartz floors. Has excellent color retention. May be used in warm temperatures when longer pot life is required.

SPECIAL PURPOSE FORMULATIONS

DUR-A-GLAZE #4 “Regular” – For most typical installations under normal conditions.

DUR-A-GLAZE #4 “Fast” – Use for intermediate coats in room temperature areas where fast turnaround is desired.

SHOP FLOOR

TECHNICAL INFORMATION

Physical Property	Test Method	Result
Hardness (Shore D)	ASTM D-2240	75-80
Compressive Strength	ASTM D-695 ASTM C-579	17,500 psi 12,500 psi
Tensile Strength	ASTM D-638 ASTM C-307	4,000 psi 2,600 psi
Tensile Elongation	ASTM D-638	7.50%
Flexural Strength	ASTM D-790 ASTM C-580	6,250 psi 4,500 psi
Flexural Modulus of Elasticity	ASTM D-790	6.2 x 10 ⁵
Coefficient of Linear Expansion	ASTM D-696	2 x 10 ⁻⁵
Bond Strength to Concrete	ASTM D-4541	400 psi substrate fails
Indentation	ML D-3134	.025 MAX
Impact Resistance	ML D-3134	Pass
Water Absorption	ASTM D-570	0.04%
Heat Resistance Limitation		140°F - 200°F
Flammability	ASTM D-635	Self Extinguishing
Flame Spread/NFPA 101	ASTM E-84	Class B
Abrasion Resistance CS-17 Wheel, 1000g load, 1000 cycles	ASTM D-4060	10 mg loss
Static Coefficient of Friction [#]	ASTM D-2047	>0.6
Dynamic Coefficient of Friction - Wet [#]	ANSI/NFSI B101.1	>0.42
VOC Content		8 g/L

* Pot life is shorter at higher temperature. Do not use below 55°F or above 95°F.

** Fast Hardener is to be used for applications between 40°F and 55°F.

[#]Dur-A-Flex flooring systems can be built to meet or exceed the requirements of Static or Dynamic Coefficient of Friction testing per installation. Contact your Dur-A-Flex territory sales manager or tech representative for more information on alternative textures, grit/grip additives, or smooth coatings for your specific environment. A sample should always be obtained and tested prior to purchase for any non-slip flooring system.

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

SHOP FLOOR INDUSTRIAL EPOXY FLOORING

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 who will be glad to assist with your questions.

SHOP FLOOR is applied by the broadcast method. When recommended spread rates are followed, a Flintshot double broadcast produces a nominal 1/8" thick finish.

IMPORTANT: Due to the nature of lighter pigment options for Shop Floor (such as Ivory, Light Grey, and custom matched light colors), they must be installed over a pigmented primer, matching or lighter color broadcast, and/or pigmented grout coat to avoid shadows, blotching, and an uneven appearance in coverage of the pigmented topcoat(s).

Dur-A-Flex recommends that a Design Center sample and ~100 sq ft test patch or mock-up be completed prior to installation to ensure that the color and texture of the finished system is desirable.

Work with your local Dur-A-Flex Technical Sales Representative or contact Dur-A-Flex directly for more information prior to ordering or applying light color Shop Floor systems to ensure the proper products are in hand before installation.

SURFACE PREPARATION

Surface must be clean, sound, dry and free of all oil, grease, detergent film, sealers and/or curing compounds. A surface profile of CSP 3 minimum is appropriate for most applications. All paint should be removed unless it is a properly applied, totally de-glossed, high quality epoxy. Please refer to the DUR-A-FLEX Surface Preparation Guide on our website for detailed instructions. No epoxy coatings should be applied unless surface temperature is a minimum of 5 degrees F above dew point. See Dew Point Calculation Chart on our website for detailed instructions.

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. 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.

NOTE: For each application of material and before mixing, mark your batches to ensure you achieve your spread rate targets. This is best accomplished by dividing your target spread rate by the width of the area being coated (or your planned wet edge). Example: If your spread rate is 100 square feet and your area is 20 feet wide you would make a mark every 5 feet (100 divided by 20 = 5).

PRIMING

Prime all surfaces with DUR-A-SHIELD, DUR-A-GLAZE WB PRIMER, Dur-A-Glaze MVP, or Elast-O-Coat as soon as the surface has been prepared. On oily concrete slabs, SIMONIZ 969 Cleaner is recommended. Be sure to apply primer **before** oil has a chance to "wick" up to the top of the slab and migrate across the surface.

QUALITY CONTROL

The color of SHOP FLOOR 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, box together the different lot numbers to ensure a uniform color for topcoat applications.

JOINT GUIDELINES

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

1. DOUBLE BROADCAST METHOD

- A. Prepare the surface as outlined in the DUR-A-FLEX Surface Preparation Guide.
- B. Prime surface with appropriate primer and spread rate.
- C. Measure ½ gallon hardener and 1 gallon 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.**

- D. Apply a “flood coat” of blended epoxy at approximately 100 Sq Ft per gallon with a 3/16” notched squeegee and back roll with a quality non-shed roller.
- E. Broadcast Flintshot aggregate. Wearing spiked shoes walk on the wet epoxy holding a 2 gallon container and broadcast the aggregate until the floor appears dry (about 1/2 lb. per Sq Ft). Be sure to keep moving while throwing the aggregate UP into the air so it falls vertically onto the epoxy. Do not rush, as it may take 15 to 30 seconds for the aggregate to be absorbed by the epoxy. IMPORTANT: Do not “seed” the edge that will be joining the next section. Be sure to leave “WET EDGE” (a 24” strip “unseeded” to permit overlapping when proceeding onto next section). Do not walk on the aggregate with spiked shoes. Be sure to keep any impurities out of the sand such as broom bristles, debris, etc. Allow to cure.
- F. Sweep off the excess aggregate using a stiff, clean, dry broom with synthetic bristles.
- G. Repeat steps C (mix), D (apply with a flat squeegee) & E (broadcast) again for 1/8” thickness, twice for a 3/16” thickness.
- H. Sweep off the excess aggregate. Sweep or vacuum the floor again.
- I. See *TOPCOAT INSTRUCTIONS below.*

2. SLURRY BROADCAST METHOD

- A. Prepare the surface as outlined in the DUR-A-FLEX Surface Preparation Guide.
- B. Prime surface with appropriate primer and spread rate.
- C. Measure out 1/2-gallon DUR-A-GLAZE #4 hardener and 1 gallon SHOP FLOOR 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.**
- D. Add 1/2 gallon of #1/2 Jersey Sand, 1/2 gallon of Flintshot aggregate and 1/2 gallon of #290 flour. Blend thoroughly with drill and Jiffler mixer. Be sure to stir the slurry mix each time immediately before you pour it on the floor, as the sand will settle in the bucket.
- E. Pour out about 1/3 of the slurry and spread with a cement finish trowel. Do not tilt the trowel more than a 45° angle. Use the jersey sand as a guide and let the trowel slide over it. (A loop roller may also be used to help make the slurry more uniform). Allow 5 to 10 minutes for the slurry to level before proceeding to the next step. (spread rate will be approx 50 sq/ft per batch)
- F. Broadcast Flintshot Aggregate. Wearing spiked shoes walk on the wet epoxy holding a 2-gallon container and

- broadcast the aggregate until the floor appears dry (about 3/4 lb. per Sq Ft). Be sure to keep moving while throwing the aggregate UP into the air so it falls vertically onto the epoxy. Do not rush, as it may take 15 to 30 seconds for the aggregate to be absorbed by the epoxy. IMPORTANT: Do not “seed” the edge that will be joining the next section. Be sure to leave this “WET EDGE” (a 24” strip “unseeded” to permit overlapping when proceeding onto next section). Do not walk on the aggregate with spiked shoes. Be sure to keep any impurities out of the sand such as broom bristles, debris, etc. Allow to cure.
- G. Sweep off the excess aggregate with a stiff broom. Sweep or vacuum the floor again.
- H. See *TOPCOAT INSTRUCTIONS below.*

TOPCOAT INSTRUCTIONS (Flintshot Only)

(1 coat for standard, 2 for orange peel, 3 for smooth)
DUR-A-GLAZE #4 WATER CLEAR and REGULAR hardeners are recommended for topcoat applications. NOTE: Do not use “Fast” Hardeners for topcoats as they yellow very quickly and could produce pinholes.

- A. Measure out 1/2-gallon DUR-A-GLAZE #4 hardener and 1 gallon SHOP FLOOR resin. Follow the same pouring and mixing procedures as described in the broadcast coat. Apply the topcoat with a 12” flat squeegee. Move squeegee in a continuous semi-circular motion from left to right to left, etc. Steady pressure on squeegee is necessary to obtain a uniform appearance. Do not advance squeegee too rapidly, each semi-circular swing should advance approximately 4 inches. Remove all puddles and ridges before they are out of reach. Start movement of squeegee in a dry area, move onto wet GLAZE and continue to move squeegee until it reaches a dry edge.
- B. Back roll with a quality short nap, non-shed roller.
- C. For multiple topcoats, sand the floor in between topcoats with a floor buffing machine and sanding attachment. Use 36 grit sandpaper.
- D. Sweep or vacuum the floor again and repeat for each topcoat. Apply pigmented Armor Top per Product Data Sheet instructions.

IMPORTANT: Be sure to pour the hardener into the mixing bucket first, then the “resin”. Always scrape the sides and bottom of mixing container to assure thorough blending. 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 for clean up.

IMPORTANT!

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

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CAUTION! 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.

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

ARMOR TOP™

DESCRIPTION

ARMOR TOP is a two, three or four component aliphatic urethane protective coating. It was formulated for high traffic areas to protect against chemicals and wear. It is available in either a clear or pigmented, gloss or satin finish, and with or without high wear resistant aluminum oxide (grit).

BENEFITS

- VOC- 0 g/L clear (pigmented - see Tech Info)
- Low Odor
- Light Stable
- Excellent Abrasion Resistance, 3 to 4 times better than other urethanes; 9 times better than epoxies
- Excellent Chemical Resistance

TYPICAL USES

It is designed to be used as a final topcoat over DUR-A-FLEX epoxy systems.

COLORS

ARMOR-TOP is available clear or in 15 standard colors. Please refer to the Standard Color Chart on our website. Custom colors are available upon request.

LIMITATIONS

ARMOR TOP should not be applied more than 3 mils wet. During application, DO NOT use 9 inch rollers and make sure that the floor temperature and materials are between 60°F and 80°F. Do not coat floor if moisture is present. Do not coat floor unless floor temp is more than 5 degrees over the dew point. Do not apply if RH >80%. Do not apply ARMOR TOP over epoxies cured with FAST hardener. ARMOR TOP should be pigmented when applied over pigmented systems. Dry Time is slower when Relative Humidity is less than 30%. For vertical applications, two coats are required – the second coat must be applied within 24 hours of the first. Do not apply Armor Top clear with Armor Top grit on a smooth floor (like Dur-A-Gard, ReFLEXions, etc.) as roller lines may be visible.

For applications where humidity is less than 30% use ARMOR TOP LH. This is available in gloss finish only. Tack-free time is approximately 6 hours. All other data remains the same as standard ARMOR TOP gloss.

APPLICATION INSTRUCTIONS

Refer to the Armor Top Application Instructions on our website for details.

KIT SPREAD RATES

	<u>Standard</u>	<u>LH</u>
Gloss Clear (w/grit)	575 SF/kit	650 SF/kit
Gloss Clear (no grit)	550 SF/kit	625 SF/kit
Gloss Pigmented (w/grit)	700 SF/kit	775 SF/kit
Gloss Pigmented (no grit)	675 SF/kit	750 SF/kit

Standard

Satin Clear (w/grit)	775 SF/kit
Satin Clear (no grit)	750 SF/kit
Satin Pigmented (w/grit)	850 SF/kit
Satin Pigmented (no grit)	825 SF/kit

NOTE: Armor Top is sold in kits only. Spread rates vary due to differences in gloss and satin kit sizes.

MOISTURE CONCERNS

Please refer to the Floor Evaluation Guidelines in the Contractor's Center of our website.

JOINT GUIDELINES

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

PACKAGING

ARMOR TOP is available in kits only.

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.

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.**

ARMOR-TOP
TECHNICAL INFORMATION

VOC		Clear - 0 g/L Pigmented <100 g/L, except for safety red and tile red which are <120 g/L	
% Solids by Weight % Solids by Volume		95.2 92.5	
Tensile Strength	ASTM 2370	7,000 psi	
Hardness	ASTM D 3363	>4H	
Taber Abrasion Resistance A&B 1000g load, 1000 cycles, CS-17 wheel after full cure	ASTM D 4060	<u>Satin Finish</u> with grit - 8 mg loss no grit - 12 mg loss	<u>Gloss Finish</u> with grit - 4 mg loss no grit - 10 mg loss
Adhesion	ASTM D-4541	Substrate Failure	
UV Resistance		Excellent	
Static Coefficient of Friction	ASTM D-2047	>0.6	
60° Gloss	ASTM D-523	Satin: 50 +/-10 Gloss: 75 +/-10	
Mixed Viscosity (Brookfield, 25°C, CPS)		500	
Flash Point, Closed cup test		110°F	
Pot Life, 70°F, 50% RH		45 minutes	
Working time on floor, 70°F, 50% RH		Armor Top Satin: 10 minutes Armor Top Gloss: 10 minutes	
Recoat Window		<24 hours	
Tack Free Time (hrs.) 90°F, 80% RH 90°F, 50% RH 90°F, 35% RH		Armor Top Satin 1 hour 2 hours 4 hours	Armor Top Gloss 1-3/4 hours 3-1/2 hours 5 hours
75°F, 80% RH 75°F, 50% RH 75°F, 35% RH		1 hour 3 hours 5 hours	2 hours 4 hours 6 hours
60°F, 80% RH 60°F, 50% RH 60°F, 35% RH		2 hours 3 hours 6 hours	2-1/4 hours 4 hours 7 hours
Return to Service		24 hours	
Full Chemical Resistance		7 days	

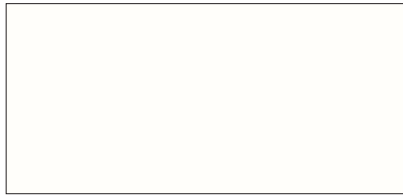
IMPORTANT!

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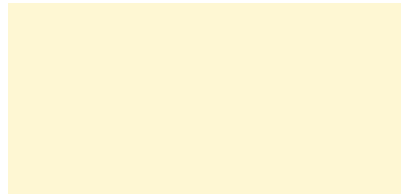
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These colors apply to Epoxy, Methacrylate (MMA), Thin Mil Urethane topcoats and Add-A-Color field mixed pigments.



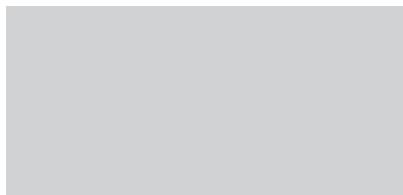
WHITE**



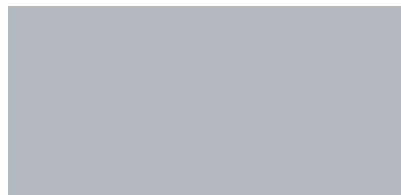
IVORY*



BEIGE



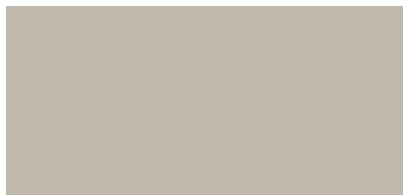
LIGHT GREY



MEDIUM GREY



SLATE GREY



CONCRETE GREY



CHARCOAL



SMOKE BLUE*



CARAMEL*



SAFETY RED*



TILE RED



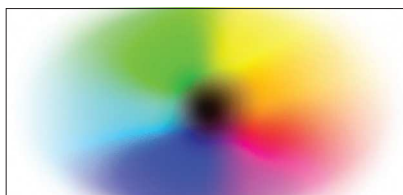
BRIGHT YELLOW



GREEN#



BLACK#



CUSTOM COLORS AVAILABLE

Due to chemical composition, thickness, application methods and job site conditions, individual colors may vary across product lines.

Colors may be affected by age, heat and exposure to sunlight. Opacity can vary between products. Please request an actual color sample of the system that you are considering to confirm the most accurate representation.

*Not available in MMA

**Not available in Shop Floor

#Not available in Armor Top



SURFACE PREPARATION GUIDELINES

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 for 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 Center of our website to assist in determining the condition of the concrete. Core analysis is recommended to determine the depth of soluble ion contamination which may contribute to osmotic blistering and floor system failure. 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.

Testing for an Existing Sealer

Test to see if the floor is “sealed” by using the Water Break Test; please refer to ASTM 3191. If the poured water forms into droplets, then an existing sealer and/or paint may exist on the surface and must be removed by diamond grinding, steel shotblasting 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.

REMOVAL AND REPAIR

ASTM D 4258-83 Standard Practice for Surface Cleaning Concrete for Coating

This practice includes surface cleaning the 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 completely 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. Concrete Surface Profile (CSP) is a reference developed by the International Concrete Repair Institute to help ensure a standard for surface profiles for coatings and toppings. (ICRI 310.2R-2013) The following table describes the required CSP for Dur-A-Flex systems.

DUR-A-FLEX SYSTEM BUILD CONCRETE SURFACE PROFILES

DUR-A-FLEX SYSTEM	CSP 2	CSP 3	CSP 4	CSP 5	CSP 6
Dur-A-Glaze Grind and Seal					
Accelera S Armor-Stat ESD Cryl-A-Shield Dur-A-Gard* Dur-A-Gard ESD Dur-A-Gard MR* Mica-Flex M ReFLEXions*					
All Hybri-Flex Systems Accelera B Accelera C Accelera Q Accelera HB Accelera HC Accelera HQ Accelera RXC Cryl-A-Chip Cryl-A-Floor Cryl-A-Quartz Cryl-A-Chip SL					
Poly-Crete MD Poly-Crete MDB Poly-Crete MDC Poly-Crete MDQ					
Dur-A-Crete Poly-Crete HF					

The Concrete Surface Profiles listed are for standard Dur-A-Flex system builds. Surface conditions can vary from job to job. For questions with preparing, or priming substrates or installing systems in varying environmental conditions, please contact your local Dur-A-Flex Technical Services Manager or Territory Sales Manager for a site visit and/or verification.

* When priming using Dur-A-Glaze MVP Primers**, a CSP of 3-4 is recommended. Note: this may result in blast lines being visible in the finished coating.

** Dur-A-Glaze MVP Primers include any available version of Dur-A-Glaze MVP, MVP2, or MVP3 Primer.

Concrete Surface Profile (CSP) is a reference developed by the International Concrete Repair Institute to help ensure a standard for surface profiles for coatings and toppings. (ICRI 310.2R-2013)

Shotblasting

Shotblasting is an excellent method for 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.

Diamond Grinding

Diamond grinding is another preferred choice for preparing concrete for polymer floor systems. Diamond grinders are floor grinders equipped with diamond abrasives. With multiple grit options available they are capable of achieving a wide range of concrete surface profiles appropriate for most resinous flooring systems. Additionally, diamond grinding is used for mechanically profiling and removing existing coatings and adhesives. Immediately after diamond grinding, vacuuming is required to remove all dust from the substrate.

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, and prepare edges against walls and columns.

NOTE: When selecting method for preparation for coating systems, any deviation greater than the system thickness needs to be pre-patched or the blast patterns or track lines may be visible.

TYPES OF SUBSTRATES

Regular Concrete

Regular concrete surface must be prepared with a steel shotblast machine 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 the removal of the 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. Please refer to your DUR-A-FLEX Technical Services Manager to determine appropriate mechanical surface prep method, fillers, and products.

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 either EZ-CLEAN floor cleaner / degreaser or Simoniz 969 cleaner. It must then be mechanically abraded to totally remove the gloss and vacuumed perfectly clean. "Tack rag" area to remove remaining dust. Consult your Technical Services Manager to determine the best preparation for the individual 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 Dur-A-Flex BLOCK FILLER to fill pores over new or existing concrete block following the application instructions.

Drywall

Drywall must be finished to a level #5 paint-ready finish prior to coating. Prime with Dur-A-Flex GRIPPER PRIMER. Substrate will affect final appearance of wall coating.

NOTE: Dur-A-Wall products require preparation in order to perform as expected. Substrates must be clean, sound and dry. If installing over substrates other than block wall or drywall please consult Dur-A-Flex Technical Services.

CRACKS AND JOINTS

Cracks and joints are treated on a case by case basis. For more information on treating cracks and joints, refer to the DUR-A-FLEX Joint Guidelines or Crack Treatment Guidelines in the Contractor Center section of our website, or contact your Technical Services Manager.

*For further assistance regarding this guide, please call your Dur-A-Flex, Inc. Territory Sales Manager or your Technical Services Manager:
(800) 253-3539 or e-mail Contact_Us@Dur-A-Flex.com*

FLOOR EVALUATION GUIDELINES

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; this 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.
- (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?

Specific ionic components of the surface chemistry of the slab (the top 0 - 3/16" [5mm]), past a certain threshold, can cause a failure to occur. Moisture failures such as capillary action, hydrostatic pressure and osmotic blistering can also occur.

Concrete defects resulting from alkaline-silicate reaction (ASR) or alkaline-aggregate reaction (AAR) within the slab may also contribute to floor failure. Dur-A-Flex recommends all concrete be tested for quality by a licensed petrographer.

HOW DO I TEST MY FLOOR?

Dur-A-Flex® has developed a chart to assist you with identifying the moisture limits for each type of Dur-A-Flex flooring system. If you are planning to use our Epoxy or MMA, Dur-A-Flex recommends using in-situ Relative Humidity (RH) Testing per ASTM F-2170 as a quantitative test method. In-situ RH is the preferred method as it is not significantly impacted by ambient temperature and relative humidity conditions in the building, and thus likely to provide more accurate readings. Calcium chloride (CaCl) testing is not recommended for moisture testing as results will differ based on the environmental factors at time of testing.

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 MOISTURE LIMITATIONS

	DUR-A-XXX, SHOP FLOOR, ELAST-O-COAT	CRYL-A-FLEX	ACCELERA	POLY-CRETE	HYBRI-FLEX	DUR-A-GLAZE MVP & MVP2 PRIMER	DUR-A-GLAZE MVP3 PRIMER
Recommended Test Method							
RH % MAXIMUM (ASTM F-2170)	75%	85% (with bond test)	75%	99%*	99%*	99%*	99%*
CaCl MAXIMUM LBS. PER 1,000 SF PER 24 HOURS (ASTM F-1869)	3	5 (with bond test)	3	20*	20*	20*	24*

*Poly-Crete, Hybri-Flex, and Dur-A-Glaze MVP Primers

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 Territory Sales Manager or the Dur-A-Flex Technical Service Department 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 (SO ₄)	~1500-5500 ppm

PRE-INSTALLATION ACCEPTABLE SOLUBLE ION LEVELS IN SUBSTRATE BY PRODUCT (COMBINED Na, K, Cl)	
Epoxy, Dur-A-Glaze MVP & MVP2, MMA, Accelera®	1600 ppm
Dur-A-Glaze MVP3	2400 ppm
Poly-Crete® SLB, MD, HF (with 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	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
Acetic Acid	30%	D	D	R	R	S	S	D	R	S	D
Acetic Acid	50%	N	N	R	N	S	S	D	D	S	N
Acetic Acid, 3%, and Propionic Acid		R	R	R	R	R	R	R	R	R	R
AC-103	100%	R	R	R	D	R	D	R	R	D	R
Acetone		N	N	N	N	R	R	R	R	R	N
ACP-99 Ketone		N	N	D	N			R			N
Alum	48%	N	N	R	N			D	D		
Aminoethanolamine		S	S	S	S			S	R		S
Ammonia	30%	R	R	R	R	R	R	R	R	R	R
Ammonium Hydroxide	30%	R	R	R	R	R	R	R	R	R	D
Antifreeze		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	DS	D	R
Avance Pot and Pan Detergent		R	R	S	R	R	R	R	DS	R	R
Benzene		N	N	D	N			R	N		N
Benzyl Alcohol		D	D	N	D	R	N	R	D	D	N
Betadine	10%	S	DS	DS	DS	S	S	S	S	S	S
Boric Acid	4%	R	R	R	R			R	R		R
Brake Fluid, DOT 3		D	D	D	D	R	S	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	R	R	R	R
Chlorine Bleach 2000		R	D	R	D	R	R	R	S	R	R
Chromic Acid	10%	S	S	S	DS	S	S	S	S	S	S
Chromic Acid	40%	N	N	S	N	S	S	DS	DS		DS
Chloraprep One-Step	2%	S	R	S	S	S	R	R	S	S	R
CIP 100 Cleaner	100%	D	R	R	R	R	R	R	R	R	R
CIP 200 Cleaner	100%	DS	DS	DS	DS	D	DS	DS	DS	DS	DS
CIP 220 Cleaner	100%	N	N	N	N	DS	R	R	S	S	R
CIP 300 Cleaner	100%	R	R	R	R	R	R	R	R	R	R
Citric Acid	10%	R	R	R	R	R		R	R	R	R
Citric Acid	20%	R	R	R	R	R		R	R	R	R
Citric Acid	50%	N	N	R	N	R		R	R	R	R
Clorox	10%	R	R	R	R	R	R	R	R	R	R
Coffee		S	S	R	S	R	R	R	R	R	R
Cola	90C	N	N	DS	N	S	S	S	S	S	S
Cola	RT	D	D	R	D	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
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
Diacetone alcohol		N	N	D				R			N
Diesel		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	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	S	S	DS
Eco-lab AC-3 Cleaner		N	N	R	N	DS	S	DS	DS	N	S
Eco-Lab Wash & Walk 14278		S		S		S		S		N	
Eco-Lab Neutral Disinfectant Cleaner (NDC)	100%	R	DS	DS	DS	R	R	R	DS	DS	R
Eco-Lab Neutral Disinfectant Cleaner (NDC)	0.5oz/Ga	R	DS	R	DS	R	R	R	DS	DS	R
EEP solvent		N	N	D	N			R	N	D	N
Enforce LP (6000 ppm)		R	S	R	R	D	R	R	D	D	R
Envirocid	100%	N	N	N	N	N	S	DS	S	N	N
Ethanol	95%	N	N	D	N	R	R	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
Fluoboric Acid		D	D	R	D			R			
Formaldehyde	37%	DS	DS	S	DS	S	S	S	S	S	S
Gasoline		R	R	R	R	R	R	R	R	R	R
Glycol Ether		N	N	D	N			R		R	R
Heating Oil-Home		R	R	R	R	R	R	R	R	R	R
Heptanoic Acid	96%			D		S				N	
Hexane		N	N	D	N	R	R	R	R	R	R
Hibiclens	4%	R	R	S	S	R	S	R	R	S	R
Hydraulic fluids		R	R	R	R	R	R	R	R	R	R
Hydrochloric Acid	5%	S	S	R	S	R	R	R	R	R	R
Hydrochloric Acid	20%	S	S	S	S	S	R	S	S	S	S
Hydrochloric Acid	37%	N	N	S	N	S	S	DS	S	DS	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

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	Poly-Thane 2 HS	Poly-Crete HF, MD, TF Plus	Poly-Crete Color Fast	MMA
Hydrofluoric Acid	10%	N	N	S	N	N		DS		DS	DS
Hydrofluoric Acid	40%	N	N	N	N	N		N	N	N	N
Hydrofluosilic Acid	30%	R	R	R	R	S		R	R	R	R
Hydrogen Peroxide	25%	D	D	R	D	S	S	R	R	R	R
Hydrogen Peroxide	50%	N	N	R	D	S	S	R	R	N	R
Hydrogen Peroxide (VHP)	560ppm			R		S		R			R
Io-Star		DS	S	S	S	S	S	S	S	S	S
Iodine Tincture	2%	S	S	S	S	S	S	S	S	S	S
Isopropanol		D	D	R	D	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
Kennel Care (Provet Logic Floor Cleaner)	100%	R	R	R	R	R	R	R	R	R	R
Lactic Acid	10%	N	N	R	N	R	S	N	R	R	R
Lactic Acid	30%	N	N	N	N	D	DS	N	R	D	R
Lactic Acid	88%	N	N	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	N	D	N
Methacrylate Monomer		D	D	D	D	R	R	D	N	N	N
Methanol		N	N	N	N	R	R	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	N	N	N
Mineral Oil		R	R	R	R	R	R	R	R	R	R
Mineral Spirits		D	D	R	D	R	R	R	R	R	R
Monoethanolamine		S	S	S	S			S			
Motor Oil		R	R	R	R	R	R	R	R	R	R
Mustard, yellow		S	S	S	N	S	R	S	S	S	R
Nickel chloride		S	S	S	S	S	S	S	S	S	S
Nickel Sulfate		S	S	S	S	S	S	S	S	S	S
Nitric Acid	10%	DS	DS	R	DS	S	S	DS	S	S	S
Nitric Acid	20%	DS	DS	R	DS	DS	N	S	S	S	S
Nitric Acid	30%	N	N	R	N	N	N	S	S	S	DS
Nitric Acid	40%	N	N	R	N	N	N	N	DS	S	N
Nitric Acid	70%	N	N	D	N	N	N	N	N	N	N
Nitric Acid	98%	N	N	N	N	N	N	N	N	N	N
Oleic Acid		R	R	R	R	R	R	R	R	R	R
Oxalic Acid	10%	R	R	R	R	R	R	R	R	R	R
Peppermint Oil	100%	R	R	R	R	S	R	R	R	R	
Peracetic Acid, 39% in Acetic acid	3%	S	D	S	S	D	R	D	S	S	R
Peroxiqard		N	DS	DS	N	DS	S	DS	S	S	S
Phenolic Paint stripper waste	1-5%	D	D	R	D			R			N
Phosphoric Acid	7%	N	N	R	N	R	R	S	R	R	R
Phosphoric Acid	25%	N	N	D	N	R	R	S	R	R	R
Phosphoric Acid	85%	N	N	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		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	R	R	R	R
Potassium Permanganate	solid	S	S	S	S			S	S		S
Propionic Acid	100%	D	D	R	D			R			N
Propyl Acetate	100%	R		R		R	R	R	R	R	N
Propyl Cellosolve		N	N	D	N			R	N		
Propylene Glycol		R	R	R	R	R	R	R	R	R	R
Propylene glycol ether		N	N	R	N	R	R	R	D	D	R
Red Wine Vinegar		R	S	S	DS	R	R	R	R	D	R
Remedy		R	S	D	R	R	R	R	S	R	R
Sani Clean		DS	S	S	DS	S	S	S	S	S	R
Silver Cyanide		S	S	S	S			S			
Silver Nitrate	5%	S	S	S	S	S	R	R	S	S	S
Silver Nitrate	20%	S	S	S	S	S	S	S	S	S	S
Skydrol		D	D	R	D	R	DS	R		R	R
Sodium Chloride		R	R	R	R	R	R	R	R	R	R
Sodium Hydroxide	50%	R	R	R	R	R	R	R	R	R	R
Sodium Hypochlorite, 10-15%	5%	R	R	R	R	D	R	R	R	R	R
Sodium Hypochlorite, 10-15%	15%	D	D	R	D	D	R	R	S	S	R
Sodium Hypochlorite, 10-15%	50%	D	D	D	D	D	R	R	S	S	R
Sodium Hypochlorite, 10-15%	100%	DS	DS	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
Spartan, Sparclean Sure Step, 2ozs/gal	1.50%	R	R	R	R	R	R	R	S	N	R
Spearmint Oil		DS	D	R	D	S	S	R	S	N	N
Spor-Klenz	0.30%	S	S	R	S	S	R	R	R	R	R
Star San		DS	S	S	DS	S	S	S	S	S	R
Stride		R	S	R	S	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	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	
Sulfuric Acid	10%	S	S	S	S	S	S	DS	S	S	S
Sulfuric Acid	30%	N	N	S	N	DS	S	DS	S	N	S
Sulfuric Acid	50%	N	N	S	N	N	DS	DS	S	N	DS
Sulfuric Acid	98%	N	N	DS	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
Terpene Fraction of Spearmint Oil	100%	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	R	S	S	R
Transmission Oil	100%	R	R	R	D	R	R	R	R	R	R
Trichloroethane (1,1,1)	100%	D	D	R	D			R			
Trichloroethylene	100%	N	N	N	N	R		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
Urine		R	R	R	R	R	R	R	R	R	R
Vesphene II ST	2 oz./2 gal. water	R	DS		DS	R	R	R	DS	DS	DS
White Vinegar		R	R	R	R	R	R	R	R	R	R
Virex		R	R	R	S	R	R	R	R	S	R
Vortexx (2600 ppm)		S	S	N	S	D	R	R	D	D	R
Water		R	R	R	R	R	R	R	R	R	R
Wine, Red		R	S	R	DS	S	R	R	R	S	R
Xylene		D	D	R	D	R	R	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 NON-INFRINGEMENT. THE ENTIRE RISK OF USE OF THE DATA SHALL BE WITH THE USER.
Ver 7 - 12.1.2020

CLEANING GUIDELINES

WHY CLEAN YOUR FLOOR?

Appearance: Your floor will look its best when it is clean. By establishing 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. Allowing cleaners to emulsify, rinsing and drying your floor properly will reduce the risk of a slip and fall incident.

Note: Wet environments need to be kept dry as possible to prevent slip and falls. Proper signage, non-slip shoes, floor fans, and walk-off mats will help prevent slip and falls in any facility

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 break down the 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

- Wax strippers should never be used on a Dur-A-Flex Floor
- Never use Enzyme based cleaners on a Dur-A-Flex Floor
- DO NOT use “No-Rinse” cleaners as the chemical concentration can increase in the residual film left behind
- Combinations of chemicals can result in staining or degradation if not properly rinsed and removed
- 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 non-abrasive white, tan or red 3M cleaning pads or equivalent. Brushes should be nylon non-abrasive Malish 8129 series or equivalent soft to medium flex nylon bristle brush.
- When using a deck brush, choose a medium/stiff bristle.
- When using a floor cleaning machine, a pad is recommended for use on smooth floor systems, while a soft to medium flex nylon bristle brush is recommended for broadcast floor systems or smooth floor systems with added texture.
- 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.
- 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)	Hallways, Healthcare Facilities, 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 troweled 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, follow cleaner guidelines for dilution rate, use 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

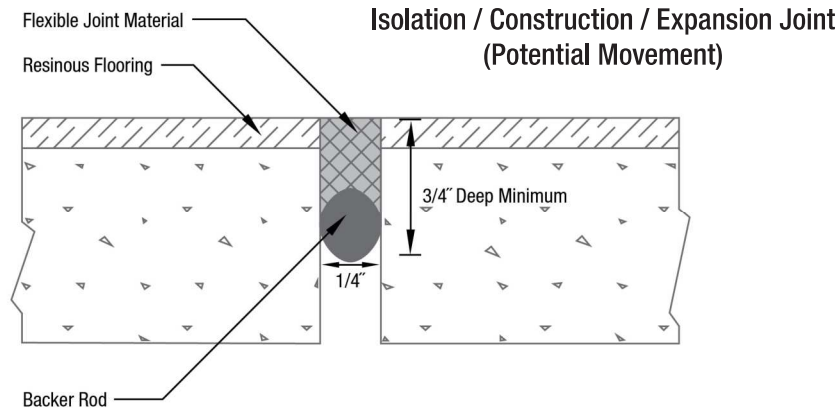
*For further technical assistance regarding this guide, please call Dur-A-Flex, Inc. Technical Services:
(800) 253-3539 or e-mail Contact_Us@Dur-A-Flex.com*

JOINT GUIDELINES

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.

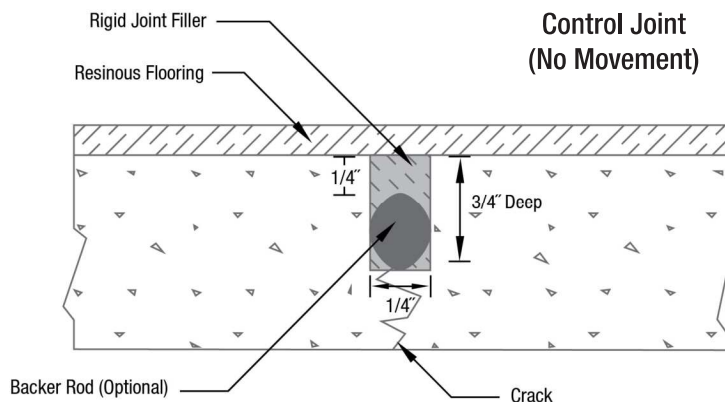


Prior to filling moving joints Dur-A-Flex®, Inc. recommends “honoring” these joints by making a sawcut through the finished floor system at a minimum depth of 3/4" deep and 1/4" wide with a diamond blade saw attached to a vacuum. Refer to the joint sealant manufacturer’s product data sheet for the recommended depth. A bond breaker such as backer rod (closed cell) must be added to the bottom of the joint.

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 sawcut 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

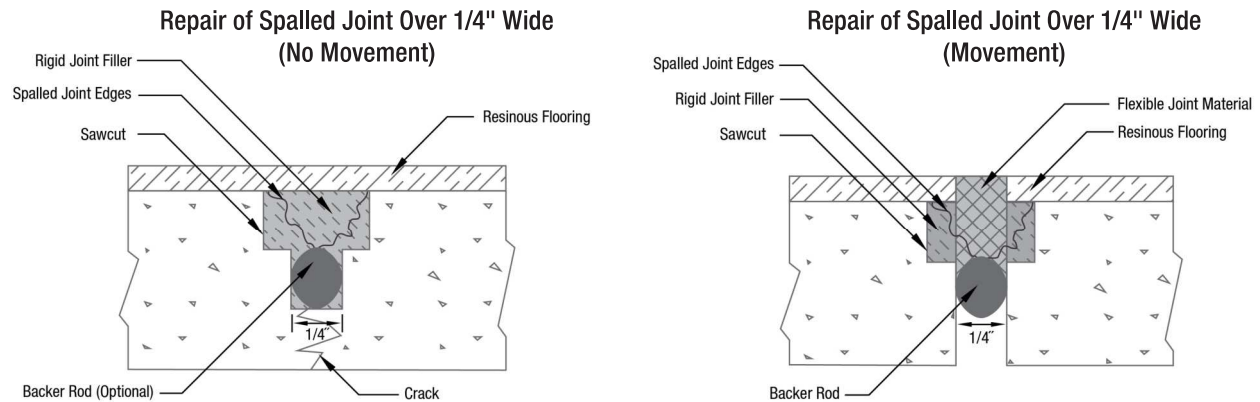
Control and or Contraction joints are considered non-moving joints which accommodate shrinkage and relieve internal stresses during the curing process of the concrete.



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 backer rod (closed cell) 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

Sawcut 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 which product is used where:

JOINTS	TYPE	BOND BREAKER	JOINT MATERIAL (1/4 INCH WIDE)	JOINT MATERIAL (OVER 1/4 INCH WIDE)
Moving (Dynamic)	Expansion / Construction / Isolation	Backer Rod 1/8" wider than joint	Flexible joint material (Metzger / McGuire, VersaFlex or equivalent)	Flexible joint material (Metzger / McGuire, VersaFlex or equivalent)
Non-moving (Static)	Control / Contraction	Optional Backer Rod 1/8" wider than joint	<ul style="list-style-type: none"> Epoxy flooring systems use Dur-A-Glaze® #4 with Cab-O-Sil (No-Sag #2): Typical mix is 1 pint Dur-A-Glaze #4 hardener, 1 quart Dur-A-Glaze #4 resin, 3 quarts Cab-O-Sil (No-Sag #2) Poly-Crete® flooring systems use Poly-Crete SL or MD to fill joint MMA flooring systems use MMA SL Filler Mix 	<ul style="list-style-type: none"> Epoxy flooring systems use Dur-A-Glaze #4 with Dur-A-Crete Poly-Crete flooring systems use Poly-Crete MD or WR MMA flooring systems use MMA SL Filler Mix or Ceryl-A-Tex

References:

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

In accordance with our warranty, Dur-A-Flex shall not be responsible for any claim resulting from failure to utilize product in a manner in which it was intended and in accordance with instructions provided for use of the product, such as these joint guidelines.

CRACK TREATMENT GUIDELINES

Similar to joints, cracks can be classified as static or dynamic and should be addressed in a similar manner as joints. Before treating it is important to note what type of crack it is.

DYNAMIC CRACKS

Dynamic cracks or active cracks are any cracks for which the mechanism causing the cracking is still at work; any cracks that are still moving. If there is known movement or visible heaving please contact a structural engineer before attempting repairs.

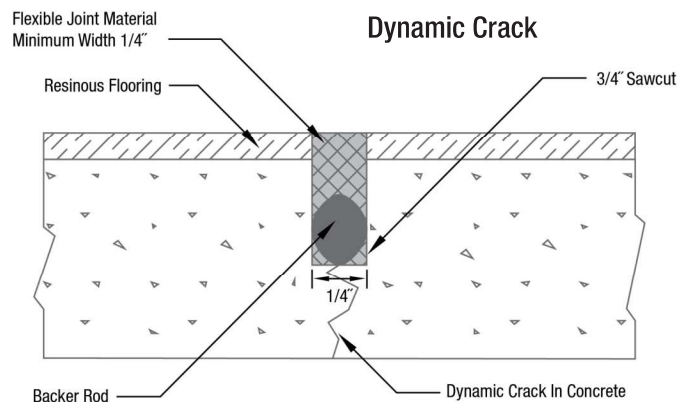
Examples of dynamic cracks are:

Settling / Structural Cracks may appear if the sub base of the slab shifts or settles after construction. These should be treated as moving joints and honored through the system.

Heaving Cracks are often a sign of continued movement of the slab or slabs.

Seismic Cracks can be caused by movement of the ground under or near a building. This can occur from natural seismic activity, or from man-made forces, such as nearby railroad tracks, etc.

It is best to identify the cause of these and determine the best way to isolate the flooring from this movement if possible.



Prior to filling dynamic cracks Dur-A-Flex, Inc. recommends making a sawcut through the finished floor system to a depth of 3/4" deep and a minimum width of 1/4" with a diamond blade saw attached to a vacuum. Add a bond breaker such as backer rod (closed cell) to the bottom. This will prevent three point adhesion.

STATIC CRACKS

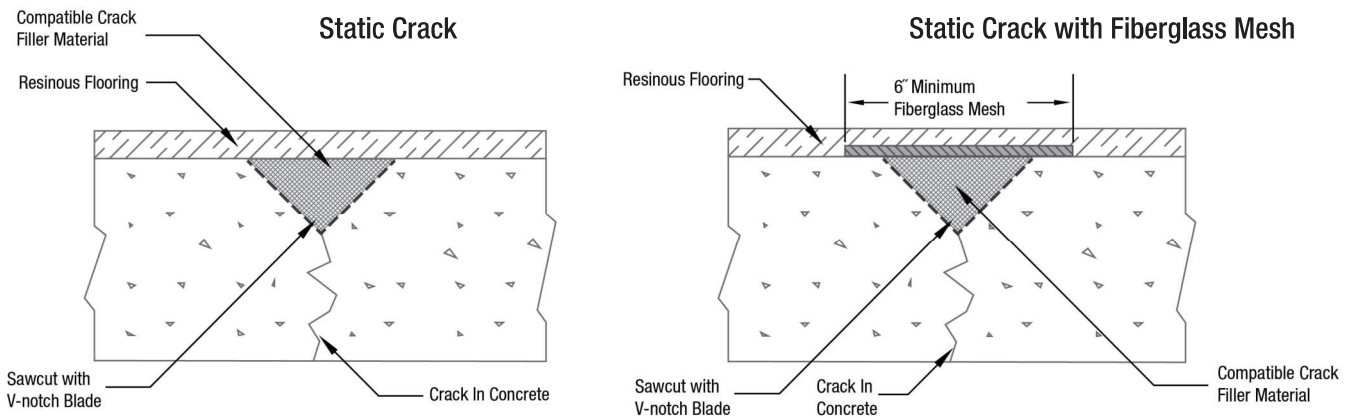
Static cracks or dormant cracks are any cracks that are not likely to become active in the future or whose movement is of such magnitude that a repair will not be affected.

Examples of static cracks are:

Craze Cracking are hairline cracks visible in the surface cream of the slab that typically do not extend very deep and are usually a result of rapid drying of the cream. Craze cracking usually does not require any special treatment and is usually mitigated in the prime coat.

Plastic Shrinkage Cracking is normal, non-structural cracking of the concrete that occurs as the slab cures. This can often be avoided by proper placement of control joints per ACI 302.1R-15.

- Plastic shrinkage cracks should be analyzed to ensure that they are static (not continuing to grow over time and do not show signs of heaving.)
- If plastic shrinkage cracks are observed prior to or during prep, they can be mitigated by patching the floor in the same method that would be used to treat a static joint.
- Plastic shrinkage cracks can also be treated using Elast-O-Coat and fiberglass mesh to bridge the crack.



Prior to filling static cracks be sure to prepare them by removing all laitance, debris and sealers. Make a sawcut with a v-notch blade attached to a vacuum.

Refer to the table below to determine which Crack Filler Material to use:

CRACKS	BOND BREAKER	REINFORCEMENT	CRACK FILLER MATERIAL (1/4 INCH WIDE)	CRACK FILLER MATERIAL (OVER 1/4 INCH WIDE)
Dynamic crack (moving)	Backer rod 1/8" wider than joint	-	Flexible joint material (Metzger / McGuire, VersaFlex or equivalent)	Flexible joint material (Metzger / McGuire, VersaFlex or equivalent)
Static crack (non-moving)	-	Optional 6 inch minimum fiberglass mesh	<ul style="list-style-type: none"> Epoxy flooring systems use Dur-A-Glaze #4 with Cab-O-Sil (No-Sag #2): Typical mix is 1 pint Dur-A-Glaze #4 hardener, 1 quart Dur-A-Glaze #4 resin, 3 quarts Cab-O-Sil (No-Sag #2) Poly-Crete flooring systems use Poly-Crete SL or MD to fill joint MMA flooring systems use MMA SL Filler Mix 	<ul style="list-style-type: none"> Epoxy flooring systems use Dur-A-Glaze #4 with Dur-A-Crete. Poly-Crete flooring systems use Poly-Crete MD or WR MMA flooring systems use MMA SL Filler Mix or Cryl-A-Tex.

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). We suggest the same for treating cracks.

Prior to treatment of cracks 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.

Note: Even with proper treatment, there is no guarantee against future cracking.

References:

International Concrete Repair Institute
 ACI 224 "Joints in Concrete Construction"
 ASTM Standards "C 1193 and C-920"
 National Ready Mixed Concrete Association "Concrete in Practice"
 Metzger/McGuire, Inc.
 AMPP

In accordance with our warranty, Dur-A-Flex shall not be responsible for any claim resulting from failure to utilize product in a manner in which it was intended and in accordance with instructions provided for use of the product, such as these crack treatment guidelines.

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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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Dur-A-Flex, Inc. | CONNECTICUT | GEORGIA | ILLINOIS | CALIFORNIA | Toll Free: 800.253.3539 | Tel: 860.528.9838 | www.Dur-A-Flex.com