



TDS

MSD FLEXBIND

MSD FLEXBIND top coat is a single component, moisture curing polyurethane coating, used for locking in aggregate on a traffic bearing polyurethane coating system. MSD FLEXBIND is an aromatic urethane coating.

Product Weight: 9 lbs per gallon

Product Packaging: 5 Gallons

Product Color: Concrete Grey / Tan

RECOMMENDED USES

- Parking decks
- Mechanical room floors
- Roof decks
- Plazas
- Recreation decks
- Walkways
- Balconies

ADVANTAGES

- Impervious to water and/or chloride penetration.
- Resistant to most common chemicals.
- Requires no additional protection when left exposed to pedestrian and/or normal vehicular traffic. Single-component Application
- High Strength, High Adhesion & High Elongation
- Excellent aggregate binding qualities
- Withstands extreme environmental conditions
- Easy Application & Rapid Cure
- Designed for demanding exterior applications
- Adds protection to Concrete, Plywood decks, Parking structures, Mechanical equipment pads & areas that require a seamless membrane for protection against water damage
- In some applications, **MSD FLEXBIND** can be used as a topcoat membrane



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LIMITATIONS

- As a moisture cure product, the relative humidity should be greater than 30% and less than 90% during application and cure of the product. If conditions in excess of this threshold, please contact your MSD sales representative for recommendations.
- Due to variation in substrate porosity, surface profile and aggregate used, achievable coverage rates can vary.
- Application must be to clean, sound, dry substrates at temperatures above 40°F (5C).
- Curing compounds, form release agents, sealers, or other contaminants may interfere with adhesion.
- Adequate ventilation, as recommended in the SDS, must be provided in application areas.

APPLICATION

General Advice:

Surfaces to receive MSD FLEXBIND must be clean, dry, sound, relatively smooth and free of voids, ridges and sharp projections. New concrete surfaces should be water cured or cured with compatible curing compounds.

Surface Preparation:

Shot-blasting must be employed to provide a sound, clean substrate. In areas where shot-blasting is not feasible, consult your sales representative for other acceptable methods of surface preparation.

Detailing:

Joints or cracks should be penetrated prior to general application by routing, grinding and sealing or over-banding with compatible MSD products. Consult your sales representative for product selection. Terminations and penetrations should also be sealed prior to general application.

Precautions:

To ensure safe installation of MSD FLEXBIND, please read the SDS in its entirety before using.

Application:

MSD FLEXBIND must be applied in accordance with manufacturer's specific recommendations.



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APPLICATION

Step 1 - Preparation: Patch and repair where needed. Route cracks over 1/16". Shot blast concrete. Caulk joints and cracks. A 4" wide detail strip of primer and base coat are applied over all cracks less than 1/16" wide, control joints and cold joints.

Step 2 - Base Coat (FLEXBASE): 5 - 7 mil notched squeegee followed by back rolling with a 3/8" nap roller.

Note: Average cure time roughly 16 hours. Can be accelerated with optional accelerant.

Step 3 - Binder (FLEXBIND): 5 - 7 mil notched squeegee followed by back rolling with a 3/8" nap roller

Step 4 - Broadcast: Carefully hand spread or blow aggregate uniformly into wet wear coat of choice, then back- roll.

Step 5 - Top Coat: Apply polyaspartic or polyurethane top-coat of choice per manufacturer recommendations.

TESTING DATA

Hardness (Shore A) ASTM D2240:	80-90
Viscosity @ 77°F (25°C) ASTM D2196 #4 RVT @ 20 rpm:	1500-3000 cps
Flash Point ASTM D93:	110°F (43.3°C)
Cure Time @ 77°F (25°C) ASTM C920:	24 Hours
Abrasion Resistance ASTM D4060 Tabor 1000 rev CS17 Wheel, 1000 grams:	Loss 0.03 grams
Weathering Resistance ASTM G53-83:	Yellowing
Permeability ASTM E398:	1.6 perms
Peel Adhesion ASTM C794:	30 pli
Tensile Strength ASTM D412:	2500 psi
Ultimate Elongation ASTM D412:	100%
Tear Resistance ASTM D1004:	200 pli
% Yield (Wet/Dry):	78%
Pot Life @ 77°F (25°C) ASTM C603:	1-2 hours
Shelf Life @ 77°F (25°C) In Sealed Containers:	6 months
Chemical Resistance:	No effect

**SDS****MSD FLEXBIND**

1: PRODUCT & COMPANY INFORMATION

PRODUCT NAME: Bulletproof FlexBind

MANUFACTURER: BallistiX Coatings & Sealers

ADDRESS: 11720 Main Street, Fredericksburg VA, 22408

PHONE: 540-940-6698

EMERGENCY CONTACT: INFOTRAC USA 24-HOUR NUMBER - 1-800-353-5053

REVISION DATE: 01/23

CHEMICAL NAME/CLASS: Aromatic Urethane Pre-Polymer Mixture

2: HAZARDOUS IDENTIFICATION

GHS Classification: Flammable liquid category 3, Specific target organ toxicity single exposure category 3, Specific target organ toxicity following repeated exposure category 1, Skin corrosion/irritation category 2, Toxic to reproduction category 2, Germ cell Mutagenicity category 1B, Serious Eye damage/Irritation Category 2B, Carcinogenicity category 1a, Acute hazard to aquatic environment category 3, Chronic hazards to aquatic environment category 3

GHS Label Elements and Precautionary Statements:

Label Elements: Flame, Health Hazard Exclamation Mark



Hazard Statements:

Warning: Flammable Liquid and Vapour.

Warning: May cause respiratory irritation.

Danger: Causes damage to organs through prolonged or repeated exposure.

Warning: Causes skin irritation.

Warning: Suspected of damaging fertility or the unborn child.

Danger: May cause genetic defects.

Warning: Causes eye irritation.

Danger: May cause cancer.

Harmful to aquatic life

Harmful to aquatic life with long lasting effects.

Precautionary statements:

P102 Keep out of reach of children.

P103 Read label before use

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting/.../equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray

P271 Use only outdoors or in a well-ventilated area.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower.

P370 + P378 In case of fire: Use ALCOHOL FOAM, CO2, DRY CHEMICAL for extinction

P304 + P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P314 Get medical advice/attention if you feel unwell.

P302 + P352 IF ON SKIN: wash with plenty of soap and water.

P333 + P313 IF SKIN irritation or rash occurs: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P305 + P351 + P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 IF eye irritation persists: Get medical advice/attention.

P391 Collect spillage.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal:

P501 Dispose of contents/container to a waste disposal facility in accordance with local, state federal or international laws



2: HAZARDOUS IDENTIFICATION

HMIS HAZARD CLASSIFICATION

HEALTH: 2 || FLAMMIBILITY: 2 || REACTIVITY: 1 || PERSONAL PROTECTIVE EQUIPMENT: G

POTENTIAL HEALTH EFFECTS

EYES: Can cause irritation, redness, tearing, or blurred vision as well as corneal opacity and conjunctivitis

SKIN: May cause irritation, defatting and dermatitis.

INGESTION: Can cause gastrointestinal irritation, nausea, vomiting, diarrhea and aspiration of material into the lungs can cause chemical pneumonitis which can be fatal. Can cause corrosive action to mucous membranes and digestive tract.

INHALATION: Can cause nausea and respiratory irritation, dizziness, weakness, fatigue, headache and possible unconsciousness. Burning sensation to mucous membranes, shortness of breath and flu like symptoms may occur.

HEALTH HAZARDS (ACUTE AND CHRONIC): Can cause sensitization by exposure through contact or high concentrations of vapor. Overexposure can possibly cause anemia. Liver abnormalities, kidney damage or eye damage. May cause asthma or other respiratory disorders, bronchitis, emphysema, hyperactivity and eczema. Chronic Inhalation: as a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma), which will cause them to react to a later exposure to isocyanate at levels well below the TLV or MGL. These symptoms, which include chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed up to several hours after exposure. Similar to many nonspecific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in several years. Chronic overexposure to isocyanates has been reported to cause lung damage, including decrease in lung function, which may be permanent. Sensitization may either be temporary or permanent. Acute skin Contact: Isocyanates react with the skin protein and moisture and can cause irritation. Symptoms of skin irritation may be reddening, swelling, rash, scaling, or blistering. Some persons may develop skin sensitization from skin contact. Cured material is difficult to remove. Chronic Skin contact: Prolonged contact with the isocyanate can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material or even as a result of vapor-only exposure.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Respiratory conditions or other allergic response.

CARCINOGENICITY

OSHA: Yes **NTP**: Yes **IARC**: Yes

ADDITIONAL CARCINOGENICITY INFORMATION:

IARC has determined that crystalline silica inhaled in the form of quartz is carcinogenic to humans (Group 1- carcinogenic to humans). The NTP classifies respirable crystalline silica as reasonably anticipated to be a carcinogen. Titanium Dioxide is listed by IARC as possibly carcinogenic to humans (group 2B).



3: COMPOSITION/INFO ON INGREDIENTS

INGREDIENT	CAS NO.	OSHA PEL	ACGIH TLV	OSHA STEL	WEIGHT %
*Residual Toluene diisocyanate	26471-62-5	0.005 ppm	None	None	<0.05
Aromatic Hydrocarbon Solvent	64742-95-6	50 ppm	100 ppm	None	10-30
Aliphatic hydrocarbon solvent	Not Known	None	None	None	5-10
Aromatic Urethane prepolymer	Not Established	None	None	None	30-60
*Crystalline silica (quartz)	14808-60-7	0.05 mg/m3	.1 mg/m3	.1 mg/m3	<1.0
Titanium dioxide	13463-67-7	10 mg/m3	10 mg/m3	5 mg/m3	5-10

Section 3 Notes:

*** Indicates toxic chemical(s) subject to reporting requirements of section 313 of Title III and of 40 CFR 372.

Note: Ingredients listed without percentages, the percentages are considered a trade secret. Information concerning non-hazardous ingredients are considered a trade secret.

4: FIRST AID MEASURES

EYES: Flush eyes with water for at least fifteen minutes and consult a physician.

SKIN: For extreme exposure use a safety shower immediately. Wash affected skin with soap and water and remove all contaminated clothing promptly.

INGESTION: Do not induce vomiting, keep person warm and consult a physician immediately. Give 1-2 cups of milk or water to drink.

INHALATION: Remove victim to fresh air and administer oxygen if necessary. Obtain medical assistance. Asthmatic type symptoms may occur immediately or be delayed for several hours. Treatment is symptomatic.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:

This product contains aromatic and aliphatic hydrocarbon solvents and aromatic isocyanate.

5: FIRST FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR
(% by volume)

UPPER: 7%
LOWER: 1%

FLASH POINT: 110F

METHOD USED: Closed cup

EXTINGUISHING MEDIA: Foam, alcohol foam, co2, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES: Do not enter confined fire area without full bunker gear including a positive pressure niosh approved self-contained breathing apparatus. Presence of solvents in products may require grounding. Remove all sources of ignition.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

If fire occurs, solvents may produce excessive pressure. Sealed drums may rupture and ignite. Vapors are heavier than air and may travel along the ground and ignite by any source of ignition. During a fire, tdi vapors and other toxic gasses may be evolved such as CO, CO2, N2O, HCN, unburned hydrocarbons, and toxic fumes.



6: RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Personnel Safeguards: Immediately evacuate all non-essential personnel to safe places. Emergency responders should wear positive pressure supplied air respirator with full face piece and proper protective gear before entering the affected area. **Regulatory Notifications:** Waste of this product is defined as hazardous according to U.S. EPA. Spill reporting requirements and reportable quantities vary by region. Consult all applicable state and local regulations. For Canada, observe all precautions noted above. **Containment and Clean-up:** Remove all sources of ignition. Provide ventilation. Respiratory protection is recommended during spill clean-up. Stop leak if possible without risk. Prevent liquids from entering sewers, drains or waterways by diking with sand or earth. Absorb with vermiculite or other absorbent material, then flush area with decontamination solution. Put in open drums. Treat and clean with decontamination solution consisting of water containing 4-8% ammonia and 2% detergent.

7: HANDLING & STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Store in a cool dry place. Seal all partially used containers. Wash with soap and water before eating, drinking, smoking or using toilet facilities. Mixed materials contain the hazards of all the components, therefore, read the SDS's of all the components prior to using material. Properly label all containers. Keep material away from all sources of ignition. Wear appropriate safety equipment and protective clothing.

OTHER PRECAUTIONS:

Avoid all skin contact. Avoid breathing vapors generated from the material. Observe conditions of good general hygiene and safe working practices. Contaminated leather articles cannot be cleaned and must be discarded if contaminated with this product. Wash all contaminated clothing prior to the reuse thereof. Wear appropriate safety equipment and respirator at all times when ventilation is not sufficient to control vapors. Observe OSHA regulations for respirator use (29 cfr 1910.134). When spraying material avoid exposure to all mists generated by using air supplied respirator.

8: EXPOSURE CONTROLS/PPE

RESPIRATORY PROTECTION: Use a NIOSH approved respirator as required to prevent over exposure to vapor in accordance with 29 CFR 1910.134. Engineering or administrative measures should be taken to reduce the risk and exposure. Use a positive pressure supplied air respirator when exceeding TLV's or if TDI monomer concentrations exceed acceptable limits of when spraying material.

VENTILATION: Exhaust ventilation sufficient to keep airborne concentrations of TDI below their TLV and MGL maximum. Refer to Patty's industrial hygiene and toxicology – volume 1 (3rd edition) chapter 17 and volume iii (1st edition) chapter 3 for details

PROTECTIVE GLOVES: Impervious gloves – neoprene or rubber

EYE PROTECTION: Splash goggles or glasses with side shields. Do not wear contact lenses when using this product.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Wear body covering clothing and other coverings as necessary such as apron and appropriate footwear to avoid contact with material.

WORK HYGIENIC PRACTICES: Observe good general hygienic practices



8: EXPOSURE CONTROLS/PPE

Exposure Limits and Guidelines Component

Quartz (respirable)
Toluene diisocyanate
Aromatic hydrocarbon solvent

CAS No.

14808-60-7
26471-62-5
64742-95-6

Exposure Limit

0.05 mg/m³ TWA, NIOSH
0.005 ppm OSHA PEL
100 ppm ACGIH TWA

9: PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE AND ODOR: High viscosity colored liquid with typical solvent odor.

BOILING POINT OR RANGE: 320 to 486 F

VAPOR DENSITY (AIR = 1): Not Determined

SPECIFIC GRAVITY (H₂O = 1): 1.18

EVAPORATION RATE: Not Determined **SOLUBILITY IN WATER:** Negligible

Odor Threshold: Not Determined

pH: Not Applicable

Melting point/freezing point: Not determined

Vapor Pressure: Not determined

Auto Ignition Temperature: Not determined

Partition Coefficient: n-octanol/water: Not determined

Decomposition Temperature: Not determined

10: STABILITY & REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID (STABILITY): Avoid excessive heat or open flames as well as all sources of ignition such as sparks, heaters, and static discharges etc.

INCOMPATIBILITY (MATERIAL TO AVOID): Avoid water, amines, strong bases, alcohols, metal compounds, and surface active compounds.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: May form toxic chemicals, carbon dioxide, carbon monoxide, oxides of nitrogen, hcn and hdi

HAZARDOUS POLYMERIZATION: Moisture of materials that react with isocyanates and temperatures above 400 degrees f may cause polymerization.

11: TOXICOLOGICAL INFORMATION

Primary Eye Irritation: Irritating

Primary Skin Irritation: Irritating, acute

Acute Dermal Toxicity: Not available

Subacute Dermal Toxicity: Not available

Dermal Sensitization: Not available

Inhalation Toxicity: Not available

Inhalation Sensitization: Not available

Oral Toxicity: Not available

Mutagenicity: Not available

Carcinogenicity: Diisocyanates are suspect carcinogens. When ingested, diisocyanates have caused cancer in certain animals. Crystalline silica is a carcinogen, listed as Human Carcinogen Category 1 in IARC. California Proposition 65 Chemicals and NIOSH also list respirable crystalline silica as carcinogenic. Keep it below 0.05 mg/m³.

Reproductive Toxicity: Not available **Teratogenicity:** Not available **Immunotoxicity:** Not available **Neurotoxicity:** Not available

No other toxicological information available



12: ECOLOGICAL INFORMATION

Aquatic Toxicity: Not known.

Terrestrial Toxicity: Not known

Chemical Fate and Transport: Not known.

No other ecological information available

13: WASTE DISPOSAL

WASTE DISPOSAL METHOD:

Dispose of the material in a waste disposal site in accordance with local, state, and federal law.

14: TRANSPORT INFORMATION

DOT: UN1263, Paint (CONTAINS aromatic hydrocarbon solvent, 3, PG III,

Other: Not regulated for non-bulk domestic ground shipments for packaging of 450 liters (119 gallons) or less (DOT 49CFR 173.150 (f)).

IMO/IMDG: UN1263, Paint (CONTAINS aromatic hydrocarbon solvent), 3, PG III

15: REGULATORY INFORMATION

Regulatory Lists

U.S. TSCA Inventory: All components of this material are on the US TSCA Inventory or exempt from listing on the TSCA Inventory.

SARA 311/312 Categories

Acute: Yes **Chronic:** Yes **Fire:** Yes **Pressure:** Yes **Reactive:** Yes

This product contains the following Sara, Title III, Section 313 Chemicals:

Toluene Diisocyanate: CAS# 26471-62-5

Quartz: CAS# 14808-60-7

Titanium Dioxide: CAS# 13463-67-7

Regulatory List for State: FL, MA, MN, PA, RI

California Proposition 65 Information: Warning! This product contains detectable components, including the following components, which are substances or belong to classes of substances known to the State of California to cause cancer, birth defects and/or other reproductive harm.

Toluene Diisocyanate: CAS# 26471-62-5

Quartz: CAS# 14808-60-7

Titanium Dioxide: CAS# 13463-67-7

Canadian Regulations:

DSL/NDSL: The components of this product are listed on the Canadian Domestic Substances List (DSL) or Non-Domestic Substance List (NDSL).

WHMIS Hazard Class: B3 D2A

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

Other Regulations: No other information available