



TRANSARMOUR

*Safety Data Sheets
and
Technical Information*

Armour-T

Technical Process Bulletin

Corrosion Resistant Dry Film Lubricant

DESCRIPTION

Armour-T is a dispersion of PTFE and graphite in a thermosetting binder designed to be applied by spray, brush, or dip. *Armour-T* produces a low friction coating with excellent resistance to corrosion and solvents. The wide range of cure temperatures 149° to 260°C (300° to 500°F) allows *Armour-T* to be used on wood, rubber and many plastics and on engineering metals. *Armour-T* is a one-package product and is not affected by low temperature storage conditions.

FEATURES

- Matte finish
- Low coefficient of friction
- Remains flexible over a wide range of temperatures
- Good release properties with a low coefficient of friction
- Consistent and uniform dip spin or spray application performance

BENEFITS

- Attractive component appearance to secure customer satisfaction
- Ability to meet lubrication requirements for the Component
- Application for a variety of environmental performance requirements
- Ability to meet lubrication and assembly requirements for the component and application
- Versatile application techniques to minimize operation costs for application

TYPICAL APPLICATIONS

- Weaponry
- Sliding rails
- Lock mechanisms
- Fasteners
- Latches
- All metals

TYPICAL PROPERTIES (of wet product)

Color:	Black
Pigment:	PTFE and graphite
Binder:	Thermoset
Carrier:	MEK
Diluent:	MEK
Consistency:	Liquid
Viscosity:	100mPa s
Density:	0.96 kg/l (8.0 lb/gal)
Solids content by weight:	25%
Flash point:	8°C
VOC:	720.0 g/l (6.0 lb/gal)
Theoretical coverage:	6.81 m ² /kg @ 25um (266 ft ² /gal @ 1mil) dry film thickness

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**Corrosion Resistant
Dry Film Lubricant**

TYPICAL PROPERTIES

(As cured)

Color:	black
Coefficient of friction:	0.08-0.10 static
Service temperature -continuous:	325°F intermittent 500°F
Salt spray resistance: (ASTMB117)	>1500 hrs class 2 >4000 hrs class 1

METHOD OF USE

Surface Preparation

For maximum resistance wear, corrosion and abrasion, the following procedures are recommended: Steel: Degrease, grit blast, and/or chemically pre-treat with Manganese Phosphate or equivalent.

Stainless Steel: Degrease, grit blast

Aluminum: Degrease, grit blast

Mixing

Armour-T can be spray applied undiluted. However to obtain maximum smoothness, dilute the product with Methyl Ethyl Ketone (MEK) in the ratio of three parts product (by weight) to one part solvent. If parts are to be dipped, a 3:2 (product: solvent) weight ratio is recommended. If dip-spin equipment is used, adjust the product to 20-30 seconds on a #2 Zahn cup.

Application

Use an external-atomizing spray gun with 35-50 psi air pressure and adjust the gun to give a well-atomized spray. For optimum performance, the final coating thickness should be .0003 - .0027 inches. When properly applied, the coating will be even and free of runs, blisters, or "fish eyes." Some electrostatic spray systems may be used to apply **Armour-T**. Contact TransArmour Finishes Department for details. **Armour-T** can also be applied by dipping. The product should be diluted 3:2 (product: solvent) by weight with MEK. The average dip coating will produce a heavier coat, but a pre-cure often minutes at 121° to 135°C (250° to 275° F) or one minute at 177°C (350°F) is required between dips. Dip-spin will require two or three coats. A partial cure of one minute at 177°C (350°F) is required between coats.

Curing

For optimum results, **Armour-T** should be cured at 177°C (350°F) for 45 minutes.

STORAGE/ HANDLING

Keep from freezing. Keep container tightly closed when not in use. Store in a cool, well ventilated area. Keep away from heat, sparks, and open flame. Protect material from direct sunlight. Ground and bond containers when transferring materials. Empty containers may retain hazardous properties. Follow all MSDS/label warnings even after container is emptied.

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APPLICATION ASSISTANCE

TransArmour's Application Specialists are available to assist you in production start-up with **Armour-T**.

HEALTH & SAFETY

Please consult Material Safety Data Sheet.





TRANSARMOUR

SAFETY DATA SHEET

SDS No. WEB-10X – PART A

• **Date Prepared:** March 15, 2017

TransArmour 10X Part A

1. IDENTIFICATION

Product Name: TransArmour 10X-Green PART A

Synonym: Ultra-weatherable waterborne topcoat

Recommended use of the chemicals: Paints and Coatings

MSDS Number: #1

Manufacturer

Company Name: TransArmour, Inc.

Address: PO Box 2290, Brandon, MS 39043

Telephone Number for Information: 601-214-3435

24 Hour Medical Emergency Telephone: (800) 420-8479

24 Hour Transportation Emergency # (CHEMTREC): (800) 424-9300

Customer Service Number: (800) 424-7833

2. HAZARDS IDENTIFICATION

The hazard classification

Not classified.

Signal word

N/A

Hazard statements

N/A

Pictograms

N/A

Precautionary statements

N/A

Description of any hazards not otherwise classified

The inhalation of the thermal decomposition product may be harmful.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS No.	%
Proprietary waterborne resin blend	Trade Secret	50-70
Green pigment dispersion	1308-38-9, 1328-53-6	2-10
Water		35-50

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

OSHA Hazardous Components (29 CFR 1910.1200)

None

4. FIRST AID MEASURES

- **Inhalation:** If exposed to fumes from overheating or combustion, move to fresh air. Consult a physician if symptoms persist.
- **Skin contact:** Wash well contact area with plenty of soap and water. Remove contaminated clothing and shoes. Get medical attention if irritation persists. Use the contaminated clothing after washing it well.
- **Eye contact:** Flush eyes including eyelids, with plenty of water for at least 15 minutes. Get medical attention.
- **Ingestion:** Get medical help.

5. FIRE-FIGHTING MEASURES

- **Suitable extinguishing media:** Use extinguishing media appropriate to surrounding fire conditions.
- **Unsuitable extinguish media/methods:** none
- **Hazardous combustion product or gases:** This product is non-flammable. However, if involved in a fire or if overheated (>200deg.C(>392deg.F), there is a risk of generation of toxic degradation products such as hydrogen chloride, hydrogen fluoride, carbon monoxide and carbon dioxide.
- **Special protective equipment for fire fighters:** Wear self-contained breathing apparatus in confined areas or when exposed to combustion products.
- **Additional information:** Move container from fire areas if it can be done without risk. Cool containers with water spray. Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations.



6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Use personal protective clothing

Environmental precautions:

Collect contaminated water/firefighting water separately.

Do not wash away into shower or waterway.

Methods for cleaning up/taking up:

Take up with absorbent material (e.g. sand, general-purpose binder)

Additional information:

Information for safe handling looks up chapter 7.

Information for disposal looks up chapter 13.

7. HANDLING AND STORAGE

Handling

Wear appropriate mask, goggles, and gloves to avoid contact with eyes and skins. Hands should be washed thoroughly after handling. Suitable ventilation should be used during application.

Storage

Keep away from sunlight and rain. Floor surface of storage place should be made of non-permeable materials to the ground such as concrete. Store in a cool, dry, well-ventilated location. Do not freeze.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Ingredients with occupational exposure limits to be monitored

N/A

Exposure controls Occupational exposure controls Engineering

Controls:

Use with appropriate local exhaust ventilation.

Personal protection:

- **Respiratory protection:** If need, use an appropriate for mist. When temperatures exceed 200 degree C and ventilation is inadequate, use a positive pressure air supplied respirator.
- **Hand protection:** Impermeable gloves
- **Skin protection:** Suits as needed by the circumstance of use.
- **Eye protection:** Safety glass, goggles, face shield.

Other information

PNOC: N/D



9. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance and Odor:** Green liquid. Slight odor.
- **pH value (25 deg.C):** 6-10
- **Boiling Point:** 100deg.C (212deg.F)
- **Melting Point:** none
- **Flash Point (method):** Non-flammable
- **Auto Flammability:** N/D
- **Ignition Temperature:** N/D
- **Flammability:** none
- **Explosive Limits:** (lower) N/D, (upper) N/D
- **Oxidizing Properties:** N/D
- **Vapor Pressure (20deg.C):** N/D
- **Specific Gravity (25deg.C):** 1.10-1.16
- **Solubility (20deg.C) in water:** Dispersible
- **Viscosity (20deg.C):** N/D

10. STABILITY AND REACTIVITY

Conditions to avoid: Overheating and freezing

Stability: Stable under normal temperature and pressure.

Materials to avoid (Incompatibilities): Strong oxidants

Hazardous decomposition products: In a fire situation, hydrogen chloride, hydrogen fluoride, carbon monoxide and carbon dioxide may liberate.

11. TOXICOLOGICAL INFORMATION

Acute toxicity: N/D

Sensitization: N/D

Mutagenicity: N/D

12. ECOLOGICAL INFORMATION

Biodegradability: N/D

Bioaccumulation: N/D

Other information: N/D



13. DISPOSAL CONSIDERATIONS

RCRA Waste Code: Not regulated under RCRA, 40 CFR261

Reuse when possible the residual product. Send waste product for thermal destruction, using high-temperature incinerators designed to burn fluorine compounds.

Reuse containers when possible, after thorough washing. Dispose of waste containers to authorized landfill, in accordance with local laws and regulations.

Comply with all federal, state and local regulations.

Do not dump this product into sewers, on the ground or into any body of water.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT)

Hazardous Materials: N/A

Hazardous Materials Description and Proper Shipping Name: N/A

Hazardous Class or Division: Not classified

Identification Number: Not regulated

Packing Group: Not classified

Label(s) Required: Not classified

UN Number: N/A

IMDG Status: Not restricted

Marine Pollutant: No

ICAO/IATA Status: Not restricted

15. REGULATORY INFORMATION

OSHA STATUS: Not applicable

TSCA STATUS: The review by the EPA of this polymer is finished. However this polymer is not listed on the TSCA inventory.

CERCLA/SUPERFUND (40 CFR 117, 302)

N/A

SARA TITLE III

SECTION 302(40 CFR 355): Not applicable

SECTION 311/312(40 CFR 370): Not applicable. (There are not enough data about Chronic Health Hazard)

SECTION 313(40 CFR 372): Not applicable

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.



16. OTHER INFORMATION

- **N/E:** Not Established
- **N/A:** Not Applicable
- **N/D:** No Data

NFPA CODES

Flammability	Hazard	Instability
1	1	1

Revision Summary: updated according to 29CFR 1910.1200(g), Section9 (2014.12)

The product is not designed for special applications such as pharmaceutical, medical use.

The information given in this safety data sheet is for safety purposes only. It is given in good faith and based on the best knowledge and experience of the company at the date of issuing.

The company is not responsible for any loss or damage caused by the use of the product in applications for which it was not intended or for conditions of use contrary to the recommendations in this safety data sheet.



SAFETY DATA SHEET



SDS No. WEB-10X – PART B

• Date Prepared: March 15, 2017

TransArmour, Inc.
PO Box 2290
Brandon, MS 39043
USA

TRANSPORTATION EMERGENCY

CALL CHEMTREC: (800) 424-9300

NON-TRANSPORTATION

Emergency Phone: Call Chemtrec
Information Phone: (601) 939-7448

Transarmour 10X Part B

1. IDENTIFICATION

Product Name: TransArmour 10X – Part B

Chemical Family: Aliphatic Polyisocyanate Based On Hexamethylene Diisocyanate (HDI)

Use: Raw material for coatings, adhesives, sealants, or elastomers in industrial applications

Restrictions on use: Do-It-Yourself Applications, Medical applications

2. Hazards Identification

GHS Classification

Acute toxicity (Inhalation): Category 4
Skin sensitization: Category 1
Specific target organ toxicity - single exposure: Category 3 (Respiratory system)

GHS Label Elements

Hazard pictograms:



Signal word: Warning

Hazard statements: May cause an allergic skin reaction.
Harmful if inhaled.
May cause respiratory irritation.

Precautionary statements: **Prevention:**
Avoid breathing dust, mist, gas, vapors or spray.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Wear protective gloves.

Response:

IF ON SKIN: Wash with plenty of soap and water.

IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.

Call a doctor or emergency medical facility (i.e. 911) if you feel unwell.

If skin irritation or rash occurs: Get medical attention.

Wash contaminated clothing before reuse.

Storage:

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

Store locked up.

Disposal:

Dispose of contents and container in accordance with existing federal, state, and local environmental control laws.

3. Composition/Information on Ingredients

Hazardous Components

<u>Weight Percent</u>	<u>Components</u>	<u>CAS-No.</u>	<u>Classification</u>
60 - 100%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2	Acute toxicity Category 4 Inhalation. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.
10 - 30%	Polyisocyanate based on HDI	125252-47-3	Acute toxicity Category 4 Inhalation. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.
<=0.2%	Hexamethylene-1,6-Diisocyanate	822-06-0	Acute toxicity Category 4 Oral. Acute toxicity Category 1 Inhalation. Skin corrosion Category 1. Serious eye damage Category 1. Respiratory sensitization Category 1. Skin sensitization Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system.

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

4. First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function



(breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Eye Contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.

Skin Contact

If direct skin contact with isocyanates occurs, immediately remove contaminated clothing and shoes. Wipe off the isocyanate product from the skin using dry towels or other similar absorbent fabric. If readily available, apply a polyglycol-based cleanser (e.g. Colorimetric Laboratories, Inc. (CLI) D-TAM™ Skin Cleanser) or corn oil. Wash with soap and warm water and pat dry. If a polyglycol-based cleanser is not available, wash with soap and warm water for 15 minutes. If available, use a wipe test pad to verify decontamination is complete (e.g. CLI SWYPE™). Get medical attention if irritation develops. Discard or wash contaminated clothing before reuse.

Inhalation

Move to an area free from further exposure. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Ingestion

Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Notes to Physician

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound. Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.



5. Firefighting Measures

Suitable Extinguishing Media: Dry chemical, Carbon dioxide (CO₂), Foam, water spray for large fires.

Unsuitable Extinguishing Media: High volume water jet

Fire Fighting Procedure

Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

Hazardous Decomposition Products

By Fire and High Heat: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

Unusual Fire/Explosion Hazards

Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO₂ formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous.

6. Accidental Release Measures

Spill and Leak Procedures

Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity released, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424-9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan. Ventilate and remove ignition sources. Control the source of the leak. Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc...). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface. For spills involving a solid product, remove mechanically (sweep up, vacuum, shovel etc.) and collect and place into an approved metal container.

Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Residual surface contamination can be checked using a wipe test pad to verify decontamination is complete (e.g. CLI Surface Swype™). If the wipe test pad demonstrates that isocyanate remains on the surface (red color on pad), repeat applications of neutralization solution, with scrubbing, followed by absorbent until the surface is decontaminated (no color change on wipe pad). Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place,

move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.



Additional Spill Procedures/Neutralization

Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment that have been in contact with an isocyanate include, but are not limited to:

- Colorimetric Laboratories, Inc. (CLI): 1-847-803-3737
 - o Isocyanate Decontamination Solution
- Spartan Chemical Company: 1-800-537-8990
 - o Spartan® ShineLine Emulsifier Plus (stripping solution)
 - o Spartan® SC-200 Heavy Duty Cleaner
- ZEP Commercial Heavy Duty Floor Stripper
- A mixture of 90% water, 10% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10)
- A mixture of 75% water, 20% non-ionic surfactant, and 5% n-propanol
- A mixture of 80% water, 10% non-ionic surfactant, 5% isopropanol, 5% ammonium hydroxide (household ammonia)

Note: Always wear proper PPE when cleaning up an isocyanate spill or when decontaminating surfaces, tools, or equipment using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Residual surface contamination can be checked using a surface wipe method such as the CLI Swype™

7. Handling and Storage

Handling/Storage Precautions

Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected.

Storage Period:

6 Months @ 25 °C (77 °F): after receipt of material by customer

Storage Temperature

Minimum: 15.56 °C (60 °F)

Maximum: 50 °C (122 °F)

Storage Conditions

Store separate from food products.

Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard 29 CFR 1910.1200.



Substances to Avoid

Water, Amines, Strong bases, Alcohols, Copper alloys

8. Exposure Controls/Personal Protection

The recommendations in this section should not be a substitute for a personal protective equipment (PPE) assessment performed by the employer as required by 29 CFR 1910 Subpart I.

Exposure Limits

Homopolymer of Hexamethylene Diisocyanate (28182-81-2)

TransArmour and Associates Exposure
Time weighted average 0.5 mg/m³

TransArmour and Associates Exposure Limit
Short Term Exposure Limit (STEL): 1.0 mg/m³ (15-min)

Polyisocyanate based on HDI (125252-47-3)

TransArmour and Associates Exposure
Time weighted average 0.5 mg/m³

TransArmour and Associates Exposure Limit
Short Term Exposure Limit (STEL): 1.0 mg/m³

Hexamethylene-1,6-Diisocyanate (822-06-0)

US. ACGIH Threshold Limit Values
Time weighted average 0.005 ppm

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Industrial Hygiene/Ventilation Measures

Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls, such as ventilation, whenever feasible. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent emissions into the workplace. If oven off-gases are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne monomeric HDI.

Respiratory Protection

A respirator that is recommended or approved for use in isocyanate-containing environments (air-purifying or fresh air-supplied) may be necessary for spray applications or other situations such as high temperature use which may produce inhalation exposures. A supplied-air respirator (either positive pressure or continuous flow-type) is recommended. Before an air-purifying respirator can be used, air monitoring must be performed to measure airborne concentrations of HDI monomer and HDI polyisocyanate. Specific conditions under which air-purifying respirators can be used are outlined in the following sections. Observe OSHA regulations for respirator use (29 CFR 1910.134). **SPRAY APPLICATION:** A. Good industrial hygiene practice dictates that when isocyanate-based coatings are spray applied, some form of respiratory



protection should be worn. During the spray application of coatings containing this product the use of a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: -the airborne isocyanate concentrations are not known; or -the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or -the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or -operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -The airborne isocyanate monomer concentrations are known to be below 0.05 ppm averaged over eight (8) hours (10 times 8 hour TWA exposure limit); and -the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits). In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup. NON-SPRAY OPERATIONS: A. During non-spray operations such as mixing, batch-making, brush or roller application, etc., at elevated temperatures (for example, heating of material or application to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be applied in a non-spray manner, a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: - the airborne isocyanate concentrations are not known; or - the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or - the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or - operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -the airborne concentrations of the isocyanate monomer are below 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); and - the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m³ averaged over eight (8) hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits) and - a NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup.

Hand Protection

Ensure gloves remain in good condition during use and replace if any deterioration is observed.

Gloves should be worn., Nitrile rubber gloves., Butyl rubber gloves., Neoprene gloves

Eye Protection

When directly handling liquid product, eye protection is required. Examples of eye protection include a chemical safety goggle, or chemical safety goggle in combination with a full face shield when there is a greater risk of splash.

Skin Protection

Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact., Gloves, long sleeved shirts and pants.

Medical Surveillance

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted



for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Additional Protective Measures

Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

9. Physical and Chemical Properties

State of Matter:	liquid
Color:	Clear, Pale yellow
Odor:	almost odorless
Odor Threshold:	No Data Available
pH:	No Data Available
Boiling Point:	No Data Available
Flash Point:	> 194 °C (381.2 °F) (Pensky-Martens Closed Cup (ASTM D-93))
Evaporation Rate:	No Data Available
Lower Explosion Limit:	No Data Available
Upper Explosion Limit:	No Data Available
Vapor Pressure:	HDI Polyisocyanate: 5.2 X 10 ⁻⁹ @ 68 F (20 C) mmHg
Vapor Density:	No Data Available
Density:	ca. 1.16 g/cm ³ @ 25 °C (77 °F) (DIN 51757)
Relative Vapor Density:	No Data Available
Specific Gravity:	1.16 @ 25 °C (77 °F)
Solubility in Water:	Insoluble - Reacts slowly with water to liberate CO ₂ gas
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	No Data Available
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	ca. 3,000 mPa.s @ 23 °C (73.4 °F) (DIN EN ISO 3219/A.3)
Kinematic Viscosity:	No Data Available
Bulk Density:	not established
Pour point:	No Data Available
Self Ignition:	not applicable

10. Stability and Reactivity

Hazardous Reactions

Contact with moisture, other materials that react with isocyanates, or temperatures above 350 F (177 C), may cause polymerization

Stability

Stable under normal conditions of use and storage.

Materials to Avoid

Water, Amines, Strong bases, Alcohols, Copper alloys

Conditions to Avoid

Heat, flames and sparks. Protect from freezing.



Hazardous Decomposition Products

By Fire and High Heat: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

11. Toxicological Information

Likely Routes of Exposure: Skin Contact
Inhalation
Eye Contact

Health Effects and Symptoms

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the exposure limits or guidelines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific 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 severe cases for several years. Sensitization can be permanent.

Prolonged contact with skin can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Prolonged vapor contact with the eyes may cause conjunctivitis.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.



Toxicity Data:

Data on the product is not available.

Please find the data available for the components.

Toxicity Data for: Homopolymer of Hexamethylene Diisocyanate

Toxicity Note

Data is based on the product, including residual monomer.

Acute Oral Toxicity

LD50: > 2,500 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity

LC50: 0.39 - 0.543 mg/l, 4 h, dust/mist (rat, male/female) (OECD Test Guideline 403)

The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore, the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Acute Dermal Toxicity

LD50: > 2,000 mg/kg (rabbit, male/female)

LD50: > 2,000 mg/kg (rat, male/female) (OECD Test Guideline 402)

Skin Irritation

rabbit, OECD Test Guideline 404, Exposure Time: 4 h, slight irritant

Eye Irritation

rabbit, OECD Test Guideline 405, slight irritant

Sensitization

Skin sensitization (local lymph node assay (LLNA)):: positive (Mouse, OECD Test Guideline 429)

Skin sensitization according to Magnusson/Kligmann (maximizing test):: positive (Guinea pig, OECD Test Guideline 406)

Respiratory sensitization:

No pulmonary sensitization observed in animal tests. No pulmonary sensitization potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene diisocyanate.

Repeated Dose Toxicity

90 d, Inhalative: NOAEL: 3.3, (rat, male/female, 6 hours a day, 5 days a week)

Irritation to lungs and nasal cavity. Evidence of damage to organs other than the organs of respiration was not found.



Mutagenicity

Genetic Toxicity in Vitro:

Salmonella/microsome test (Ames test): No indication of mutagenic effects. (Metabolic Activation: with/without)

Chromosome aberration test in vitro: negative (Chinese hamster V79 cell line, Metabolic Activation: with/without)

Point mutation in mammalian cells (HPRT test): negative (Chinese hamster ovary (CHO) cells, Metabolic Activation: with/without)

Toxicity Data for: Polyisocyanate based on HDI**Toxicity Note**

Data is based on a similar product, including residual monomer.

Acute Oral Toxicity

LD50: > 2,000 mg/kg (rat)

Acute Inhalation Toxicity

LC50: 0.39 mg/l, 4 h, dust/mist (rat, female) (OECD Test Guideline 403)

Toxicological studies of a comparable product. The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore, the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Acute Dermal Toxicity

LD50: > 2,000 mg/kg (rabbit, male/female)

Studies of a comparable product.

LD50: > 2,000 mg/kg (rat, male/female) (OECD Test Guideline 402)

Studies of a comparable product.

Skin Irritation

rabbit, OECD Test Guideline 404, slight irritant

Studies of a comparable product.

Eye Irritation

rabbit, OECD Test Guideline 405, slight irritant

Studies of a comparable product.

Sensitization

Skin sensitization according to Magnusson/Kligmann (maximizing test):: positive (Guinea pig, OECD Test Guideline 406)

Studies of a comparable product.

Mutagenicity

Genetic Toxicity in Vitro:

Salmonella/microsome test (Ames test): No indication of mutagenic effects.

Studies of a comparable product.

Toxicity Data for: Hexamethylene-1,6-Diisocyanate**Acute Oral Toxicity**

LD50: 746 mg/kg (rat, male) (OECD Test Guideline 401)

LD50: 959 mg/kg (rat, male) (OECD Test Guideline 401)



Acute Inhalation Toxicity

LC50: 0.124 mg/l, 4 h, vapor (rat, male/female) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: > 7,000 mg/kg (rat, male/female) (OECD Test Guideline 402)

Skin Irritation

rabbit, OECD Test Guideline 404, Corrosive

Eye Irritation

rabbit, OECD Test Guideline 405, Corrosive

Sensitization

dermal: sensitizer (Guinea pig, Maximization Test)

dermal: sensitizer (Human, Case Report)

Respiratory sensitization: sensitizer (Guinea pig)

Repeated Dose Toxicity

2 years, inhalation: NOAEL: 0.005 ppm, (rat, Male/Female, 6 hrs./day 5 days/week) Irritation to lungs and nasal cavity.

Mutagenicity

Genetic Toxicity in Vitro:

Salmonella/microsome test (Ames test): negative (Salmonella typhimurium, Metabolic Activation: with/without)

Point mutation in mammalian cells (HPRT test): negative (Metabolic Activation: with/without)

Genetic Toxicity in Vivo:

Micronucleus test: negative (Mouse, male/female, Inhalative)
negative

Carcinogenicity

rat, male/female, Inhalative, 2 yrs., 6 hours/day, 5 days/week Did not show carcinogenic effects in animal experiments.

Toxicity to Reproduction/Fertility

Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test, Inhalative, 6 hours/day 7 days/week, (rat, male/female) NOAEL (F2): 0.3 ppm Fertility and developmental toxicity tests did not reveal any effect on reproduction.

Developmental Toxicity/Teratogenicity

rat, female, Inhalative, 6 hours/day (Exposure duration: day 0 - 19 of gestation), NOAEL (teratogenicity): 0.3 ppm, NOAEL (maternal): 0.005 ppm Did not show teratogenic effects in animal experiments.

Neurological Effects

Rats exposed by inhalation, 6 hours/day, for approximately 3 weeks, to concentrations as high as 0.3 ppm showed no neurobehavioral effects or damage to nerve tissues.

Carcinogenicity:

No carcinogenic substances as defined by IARC, NTP and/or OSHA



12. Ecological Information

Ecological Data for: BAYHYDUR 302

Data on the product is not available.

Please find the data available for the components.

Ecological Data for Homopolymer of Hexamethylene Diisocyanate

Biodegradation

aerobic, 1 %, Exposure time: 28 d, i.e. not readily degradable

aerobic, 0 %, Exposure time: 28 d, i.e. not readily degradable

Bioaccumulation

3.2 BCF

An accumulation in aquatic organisms is not to be expected.

367.7 BCF

An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products.

Acute and Prolonged Toxicity to Fish

LC50: > 100 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: > 100 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

ErC50: > 1,000 mg/l, (scenedesmus subspicatus, 72 h)

Toxicity to Microorganisms

EC50: 3,828 mg/l, (activated sludge, 3 h)

Additional Ecotoxicological Remarks

Data is based on the product, including residual monomer.

Ecological Data for Polyisocyanate based on HDI

Biodegradation

2 %, Exposure time: 28 d, i.e. not readily degradable

Acute and Prolonged Toxicity to Fish

LC50: 17.8 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 58 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

ErC50: > 100 mg/l, (scenedesmus subspicatus, 72 h)

Toxicity to Microorganisms

EC50: > 10,000 mg/l, (activated sludge)

Studies of a comparable product.



Additional Ecotoxicological Remarks

Data is based on a similar product, including residual monomer.

Ecological Data for Hexamethylene-1,6-Diisocyanate**Biodegradation**

aerobic, 42 %, Exposure time: 28 d, i.e. not readily degradable

Bioaccumulation

value calculated, 57.6 BCF

An accumulation in aquatic organisms is not to be expected.

value calculated, 3.2 BCF

An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products.

Acute and Prolonged Toxicity to Fish

LC0: \geq 82.8 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC0: \geq 89.1 mg/l (Daphnia magna (Water flea), 48 h)

Toxicity to Aquatic Plants

ErC50: $>$ 77.4 mg/l, (Desmodesmus subspicatus (Green algae), 72 h)

Toxicity to Microorganisms

EC50: 842 mg/l, (activated sludge, 3 h)

13. Disposal Considerations**Waste Disposal Method**

Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions

Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are removed prior to disposal.

14. Transportation Information**Land transport (DOT)**

Proper Shipping Name:	Other regulated substances, liquid, n.o.s. (contains Hexamethylene-1,6-Diisocyanate)
Hazard Class or Division:	9
UN/NA Number:	NA3082
Packaging Group:	III
Hazard Label(s):	CLASS 9

RSPA/DOT Regulated Components:

Hexamethylene-1,6-Diisocyanate

Reportable Quantity: 22680 kg (50001 lb.)

Sea transport (IMDG)

Non-Regulated



Air transport (ICAO/IATA)

Non-Regulated

Additional Transportation Information

When in individual containers of less than the Product RQ, this material ships as non-regulated.

15. Regulatory Information

United States Federal Regulations

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

No substances are subject to TSCA 12(b) export notification requirements.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components:

Hexamethylene-1,6-Diisocyanate Reportable quantity: 100 lbs.

SARA Section 311/312 Hazard Categories:

Acute Health Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components:

None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components:

None

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste.

State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
60 - 100%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2
10 - 30%	Polyisocyanate based on HDI	125252-47-3
<=0.2%	Hexamethylene-1,6-Diisocyanate	822-06-0

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
<=0.2%	Hexamethylene-1,6-Diisocyanate	822-06-0

California Prop. 65:

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
<1 ppt	Sulfuric acid	7664-93-9



CFATS (Chemical Facility Anti-Terrorism Standards) Chemicals

To the best of our knowledge, this product does not contain Appendix A Chemicals of Interest (COI), at or above the Screening Threshold Quantity (STQ), as defined by the Department of Homeland Security Chemical Facility Anti-terrorism Standard (CFATS, 6 CFR Part 27).

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

16. Other Information

The handling of products containing reactive HDI polyisocyanate/prepolymer and/or monomeric HDI requires appropriate protective measures referred to in this SDS. These products are therefore recommended only for use in industrial or trade (commercial) applications. They are not suitable for use in Do-It-Yourself applications.

Information contained in this SDS is believed to be accurate but is furnished without warranty, express or implied, including warranties of merchantability or fitness for a particular purpose. The information relates only to the specific material designated herein. TransArmour, Inc. assumes no legal responsibility for use of or reliance upon the information in this SDS and such information shall in no case be considered a part of our terms and conditions of sale. The user is responsible for determining whether the TransArmour product is suitable for user's method of use or application. TransArmour is not liable for any failure to observe the precautionary measures described in this SDS or for any misuse of the product.





1. PRODUCT AND COMPANY IDENTIFICATION

Product name: **Armour-T**
Product type: Dry film lubricant
Restriction of Use: None identified
Company address:
TransArmour
4307 Hwy 80
Pelahatchie, MS 39145

Region: United States
Contact information:
Telephone: (601) 939-7448
Internet: armour-t.com/

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: HIGHLY FLAMMABLE LIQUID AND VAPOR.
MAY BE FATAL IF SWALLOWED AND ENTERS AIRWAYS.
CAUSES SKIN IRRITATION.
MAY CAUSE AN ALLERGIC SKIN REACTION.
CAUSES SERIOUS EYE IRRITATION.
MAY CAUSE ALLERGY OR ASTHMA SYMPTOMS OR BREATHING DIFFICULTIES IF INHALED.
MAY CAUSE DROWSINESS OR DIZZINESS.
MAY CAUSE CANCER.

HAZARD CLASS	HAZARD CATEGORY
FLAMMABLE LIQUID	2
SKIN IRRITATION	2
EYE IRRITATION	2A
RESPIRATORY SENSITIZATION	1
SKIN SENSITIZATION	1
CARCINOGENICITY	1A
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3
ASPIRATION HAZARD	1

PICTOGRAM(S)



Precautionary Statements

Prevention:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, sparks, open flames, hot surfaces - no smoking. Keep container tightly closed. No release into water. Use explosion-proof equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing vapors, mist, or spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear protective



Response: gloves, eye protection, and face protection. Use personal protective equipment as required. In case of inadequate ventilation wear respiratory protection.
 IF SWALLOWED: Immediately call a physician or poison control center. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. IF exposed or concerned: Get medical attention. Do NOT induce vomiting. If skin irritation or rash occurs: Get medical attention. If eye irritation persists: Get medical attention. Take off contaminated clothing. In case of fire: Use foam, dry chemical or carbon dioxide to extinguish.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional lexicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
n-Butyl alcohol	71-36-3	10-30
Synthetic resin	Proprietary	10-30
Ethanol	64-17-5	10-30
Toluene	108-88-3	10-30
Methoxypropyl acetate 2-	108-65-6	10-30
n-Butyl acetate	123-86-4	1-5
Pentylacetat	628-63-7	1 -5
Xylenes	1330-20-7	1 -5
Propyl acetate	109-60-4	1-5
Methanol	67-56-1	1-5
Carbon black	1333-86-4	0.1 -1
Ethyl benzene	100-41-4	0.1 -1
Formaldehyde	50-00-0	0.1 -1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

Skin contact: Immediately wash skin thoroughly with soap and water. If symptoms develop and persist, get medical attention.

Eye contact: In case of contact with the eyes, rinse immediately with plenty of water for 15 minutes, and seek immediate medical attention.

Ingestion: Get immediate medical attention. DO NOT induce vomiting unless directed to do so by medical personnel.

Symptoms: See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media: Water spray (fog), foam, dry chemical or carbon dioxide.

Product name: Armour-T

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Special firefighting procedures:	Wear full protective clothing. Wear self-contained breathing apparatus.
Unusual fire or explosion hazards:	DANGEROUS when exposed to heat or flame. This material can be ignited by flame or spark under all normal atmospheric conditions. Vapors are heavier than air and may travel to ignition sources and flash back.
Hazardous combustion products:	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Prevent further leakage or spillage if safe to do so. Wear appropriate protective equipment and clothing during clean-up. Remove all sources of ignition. Do not allow product to enter sewer or waterways.
Clean-up methods:	Absorb spill with inert material. Shovel material into appropriate container for disposal. Dispose of according to Federal, State and local governmental regulations.

7. HANDLING AND STORAGE

Handling:	Avoid contact with eyes, skin and clothing. Avoid breathing vapors or mists of this product. Use only with adequate ventilation. Wash thoroughly after handling. Do not take internally. Keep away from heat, spark and flame. Ground and bond all equipment as required (when transferring products). Use non-sparking tools when opening or closing containers.
Storage:	For safe storage, store between 5.0 °C (41 °F) and 30.0 °C (86°F) Keep container tightly closed and in a cool, well-ventilated place away from incompatible materials. Do not pressurize, cut, heat or weld containers. Empty product containers may contain product residue. Do not reuse empty containers.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.



8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHAWHEEL	OTHER
n-Butyl alcohol	20 ppm TWA	100 ppm (300 mg/m ³) PEL	None	None
Synthetic resin	None	None	None	None
Ethanol	1,000 ppm STEL	1,000 ppm (1,900 mg/m ³) PEL	None	None
Toluene	20 ppm TWA	200 ppm TWA 300 ppm Ceiling 500 ppm MAX. CONG 10 minutes	None	None
Methoxypropyl acetate 2-	None	None	50 ppm TWA	None
n-Butyl acetate	150 ppm TWA 200 ppm STEL	150 ppm (710 mg/m ³) PEL	None	None
Pentylacetat	50 ppm TWA 100 ppm STEL	100 ppm (525 mg/m ³) PEL	None	None
Xylenes	100 ppm TWA 150 ppm STEL	100 ppm (435 mg/m ³) PEL	None	None
Propyl acetate	200 ppm TWA 250 ppm STEL	200 ppm (840 mg/m ³) PEL	None	None
Methanol	200 ppm TWA (SKIN) 250 ppm STEL	200 ppm (260 mg/m ³) PEL	None	None
Carbon black	3 mg/m ³ TWA Inhalable fraction.	3.5 mg/m ³ PEL	None	None
Ethylbenzene	20 ppm TWA	100 ppm (435 mg/m ³) PEL	None	None
Formaldehyde	0.3 ppm Ceiling (Sensitizer.)	2 ppm STEL 0.5 ppm OSHA_ACT 0.75 ppm TWA	None	None

Engineering controls:

Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

Respiratory protection:

If ventilation is not sufficient to effectively prevent buildup of aerosols, mists or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Eye/face protection:

Wear safety glasses; chemical goggles (if splashing is possible).

Skin protection:

Wear impervious gloves for prolonged contact. Gloves should be tested to determine suitability for prolonged contact. Use of impervious apron and boots are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Black
Odor:	Solvent
Odor threshold:	Not available.
PH:	Not applicable
Vapor pressure:	19 mm hg
Boiling point/range:	> 35 °C (> 95° F)
Melting point/ range:	Not determined
Specific gravity:	0.959
Vapor density:	1.0
Flash point:	7.78 °C (46°F) Closed cup
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.

Product name: **Armour-T**

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Autoignition temperature:	Not determined
Evaporation rate:	Not applicable
Solubility in water:	Negligible
Partition coefficient (n-octanol/water):	Not available.
VOC content:	720 g/l
Viscosity:	>= 100cp
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability	Stable at normal conditions.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Incompatible materials:	This product may react with strong acids or oxidizing agents.
Reactivity: Conditions to avoid:	Not available. Heat, flames, sparks and other sources of ignition.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure:	Skin, Inhalation, Eyes
-------------------------------------	------------------------



Potential Health Effects/Symptoms

Inhalation: This product is irritating to the respiratory system. Breathing high concentrations of vapor may cause anesthetic effects. May cause dizziness, incoordination, headache, nausea, and vomiting.

Skin contact: This product is irritating to the skin. Symptoms may include redness, edema, drying, defatting and cracking of the skin. A component in this product may be absorbed through the skin in harmful amounts.

Eye contact: This product is irritating to the eyes. Symptoms include itching, burning, redness and tearing.

Ingestion: Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause dizziness, incoordination, headache, nausea, and vomiting.

Hazardous Component(s)	LDSOs and LCSOs	Immediate and Delayed Health Effects
n-Butyl alcohol	Oral LD50 (RAT) = 790 mg/kg Dermal LD50 (RABBIT) = 3,400 mg/kg Inhalation LC50 (RAT, 4 h) = 8000 ppm	Allergen, Central nervous system, Ear, Eyes, Irritant
Synthetic resin	None	Allergen, Corrosive, Irritant, Kidney, Respiratory, Skin
Ethanol	Oral LD50 (RAT) = 9.9 g/kg Oral LD50 (RAT) = 6.2 g/kg Oral LD50 (RAT) = 17.8 g/kg Oral LD50 (RAT) = 11.5 g/kg Oral LD50 (RAT) = 10.6 g/kg Oral LD50 (RAT) = 7,060 mg/kg Inhalation LC50 (RAT, 10 h) = 20000 ppm	Central nervous system, Irritant
Toluene	Oral LD50 (RAT) = 2.6 g/kg Oral LD50 (RAT) = 5,000 mg/kg Dermal LD50 (RABBIT) = 12,124 mg/kg Inhalation LC50 (RAT, 1 h) = 26700 ppm Inhalation LC50 (RAT, 2 h) = 12200 ppm Inhalation LC50 (RAT, 4 h) = 8000 ppm	Behavioral, Cardiac, Central nervous system, Developmental, Ear, Irritant
Methoxypropyl acetate 2-	None	Irritant, Central nervous system
n-Butyl acetate	Oral LD50 (RAT) = 14,000 mg/kg Oral LD50 (RAT) = 14,130 mg/kg Inhalation LC50 (, 4Ji) = 160 mg/l	Irritant, Central nervous system
Pentylacetat	None	Irritant, Central nervous system
Xylenes	Oral LD50 (RAT) = 6,670 mg/kg Oral LD50 (RAT) = 3,523 - 8,600 mg/kg Oral LD50 (RAT) = 4,300 mg/kg Dermal LD50 (RABBIT) = > 43 g/kg Inhalation LC50 (RAT, 4 h) = 6,350 mg/l	Cardiac, Central nervous system, Irritant, Kidney, Liver
Propyl acetate	Oral LD50 (RABBIT) = 6.64 g/kg Oral LD50 (RAT) = 9,370 mg/kg	Central nervous system, Irritant
Methanol	Oral LD50 (RAT) = 5,628 mg/kg Oral LD50 (RABBIT) = 14.4 g/kg Dermal LD50 (RABBIT) = 15,800 mg/kg Inhalation LC50 (RAT, 6 h) = 87.5 mg/l Inhalation LC50 (RAT, 4 h) = 64000 ppm	Eyes, Heart, Irritant, Kidney, Liver, Metabolic, Nervous System, Reproductive
Carbon black	Oral LD50 (RAT) = > 8,000 mg/kg	Respiratory, Some evidence of carcinogenicity
Ethylbenzene	Oral LD50 (RAT) = 5.46 g/kg Oral LD50 (RAT) = 3,500 mg/kg Dermal LD50 (RABBIT) = 17,800 mg/kg	Irritant, Central nervous system
Formaldehyde	Oral LD50 (RAT) = 2,020 mg/kg Oral LD50 (RAT) = 100 mg/kg Oral LD50 (RAT) = 800 mg/kg Inhalation LC50 (RAT, 4 h) = 0.48 mg/l Inhalation LC50 (RAT, 0.5 h) = 0.82 mg/l	Allergen, Behavioral, Central nervous system, Irritant, Liver, Metabolic, Mutagen, Reproductive, Respiratory. Some evidence of carcinogenicity

Hazardous Component(s)	NTP Carcinogen	(ARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
n-Butyl alcohol	No	No	No
Synthetic resin	No	No	No



Ethanol	No	No	No
Toluene	No	No	No
Methoxypropyl acetate 2-	No	No	No
n-Butyl acetate	No	No	No
Pentylacetat	No	No	No
Xylenes	No	No	No
Propyl acetate	No	No	No
Methanol	No	No	No
Carbon black	No	Group 2B	No
Ethyl benzene	No	Group 2B	No
Formaldehyde	Known To Be Human Carcinogen.	Group 1	Yes

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.

Hazardous waste number: If discarded, this product is considered a RCRA ignitable waste, D001.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Coating solution
Hazard class or division: 3
Identification number: UN 1139
Packing group: II
DOT Hazardous Substance(s): Xylene (mixed), Toluene

International Air Transportation (ICAO/IATA)

Proper shipping name: Coating solution
Hazard class or division: 3
Identification number: UN 1139
Packing group: II

Water Transportation (IMO/IMDG)

Proper shipping name: COATING SOLUTION
Hazard class or division: 3
Identification number: UN 1139
Packing group: II

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.

TSCA12 (b) Export Notification: Ethene, tetrafluoro-, homopolymer (CAS# 9002-84-0).

CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health, Fire

Product name: **Armour-T**
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CERCLA/SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). n-Butyl alcohol (CAS# 71-36-3). Toluene (CAS# 108-88-3). Xylenes (CAS# 1330-20-7). Methanol (CAS# 67-56-1). Ethylbenzene (CAS# 100[^]1-4). Formaldehyde (CAS# 50-00-0).

CERCLA Reportable quantity: n-Butyl alcohol (CAS# 71-36-3) 5,000 lbs. (2,270 kg)
Toluene (CAS# 108-88-3) 1,000 lbs. (454 kg)
Xylenes (CAS# 1330-20-7) 100 lbs. (45.4 kg)

California Proposition 65: This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: TransArmour

Issue date: 10/10/2014

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SAFETY DATA SHEET



TRANSARMOUR

1. Identification

Product identifier WEB-10X Primer PART A

Other means of identification

Product code WEB-10X Primer PART A

Recommended use Coating Component

Recommended restrictions For Labeled Use Only

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name TransArmour, Inc.
Address P.O. Box 2290, Brandon, MS 39043

Contact person Regulatory Affairs

Telephone number 601-214-3435

Emergency telephone # (800) 424-9300

(Only in the event of chemical emergency involving a spill, leak, fire, exposure or accident involving chemicals)

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Sensitization, skin Category 1

Environmental hazards Hazardous to the aquatic environment, acute hazard Category 2

Hazardous to the aquatic environment, long-term hazard Category 2

OSHA defined hazards Not classified.

Label elements



Signal word Warning

Hazard statement May cause an allergic skin reaction. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Avoid breathing mist or vapor. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves.

Response If on skin: Wash with plenty of water. If exposed or concerned: Get medical advice/attention. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. Collect spillage.

Storage Store away from incompatible materials.

Disposal Buyer assumes all risk and liability associated with disposal of this product (original concentration or dilution) in violation of applicable law in compliance with applicable federal, state and local requirements. CONTAINER DISPOSAL: Triple rinse (or equivalent), then offer clean, dry container for recycling or reconditioning.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Titanium dioxide		13463-67-7	30 - < 40
Silica, Crystalline Quartz		14808-60-7	3 - < 5
Trizinc Bis(orthophosphate)		7779-90-0	1 - < 3
Other components below reportable levels			50 - < 60

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Prevent product from entering drains. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.



7. Handling and storage

Precautions for safe handling

Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Silica, Crystalline Quartz (CAS 14808-60-7)	PEL	0.05 mg/m ³	
Titanium dioxide (CAS 13463-67-7)	PEL	15 mg/m ³	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Silica, Crystalline Quartz (CAS 14808-60-7)	TWA	0.1 mg/m ³	Respirable.
		2.4 mppcf	Respirable.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Silica, Crystalline Quartz (CAS 14808-60-7)	TWA	0.025 mg/m ³	Respirable fraction.
Titanium dioxide (CAS 13463-67-7)	TWA	10 mg/m ³	

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Silica, Crystalline Quartz (CAS 14808-60-7)	TWA	0.05 mg/m ³	Respirable dust.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection Avoid contact with eyes. Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other

Avoid contact with the skin. If unable to avoid prolonged or repeated contact with skin, wear impervious clothing.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards

None known.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	Opaque, white liquid
Physical state	Liquid.
Form	Liquid.
Color	White



Odor	Non-objectional odor
Odor threshold	Not available.
pH	7.5 - 8.5
Melting point/freezing point	Not applicable / Not available
Initial boiling point and boiling range	> 200 °F (> 93.33 °C)
Flash point	> 200.0 °F (> 93.3 °C) Tag Closed Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1.08 at 77°F
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	> 30 cP
Other information	
Density	8.99 lb/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	Not available
Specific gravity	Not available

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	May cause an allergic skin reaction.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics May cause an allergic skin reaction. Dermatitis. Rash.

Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.



Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization May cause an allergic skin reaction.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Carcinogenic effects are not expected as a result of occupational exposure.

Titanium Dioxide is not classified as a carcinogen by NTP, U.S. OSHA, or the U.S. EPA. Normal application procedures pose minimal hazard since the TIO₂ is wet and encapsulated.

Crystalline Quartz, Silica (CAS 14808-60-7) is a Category 1 Carcinogen (Carcinogen to Humans) in respirable dust form. However, normal application procedures pose minimal hazard since it is wet and encapsulated.

IARC Monographs. Overall Evaluation of Carcinogenicity

Silica, Crystalline Quartz (CAS 14808-60-7)

1 Carcinogenic to humans.

Titanium dioxide (CAS 13463-67-7)

2B Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Not an aspiration hazard.

Chronic effects Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Product	Species	Test Results
WEB-10X Primer PART A		
Aquatic		
Fish	LC50	Fish 5.97 mg/l, 96 hours estimated
Components	Species	Test Results
Titanium dioxide (CAS 13463-67-7)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna) > 1000 mg/l, 48 hours
Fish	LC50	Mummichog (Fundulus heteroclitus) > 1000 mg/l, 96 hours
Trizinc Bis(orthophosphate) (CAS 7779-90-0)		
Aquatic		
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss) 0.09 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with



local/regional/national/international regulations.



Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
 Immediate Hazard - Yes
 Delayed Hazard - No
 Fire Hazard - No
 Pressure Hazard - No
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)
 Not regulated.

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations WARNING: This product contains a chemical known to the State of California to cause cancer.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Titanium dioxide (CAS 13463-67-7) Listed: September 2, 2011

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Silica, Crystalline Quartz (CAS 14808-60-7)
 Titanium dioxide (CAS 13463-67-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes



Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	Draft version.
Version #	Draft version.
HMIS® ratings	Health: 2 Flammability: 0 Physical hazard: 0
Disclaimer	No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any nature are made with respect to the product(s) or information contained in this material safety data sheet. The information and recommendations contained in this Material Safety Data Sheet are supplied pursuant to 29 CFR 1910.1200 of the Occupational Safety and Health Standards Hazard Communication Rule. All information contained herein is presented in good faith and is believed to be appropriate and accurate. The buyer or user assumes all risks associated with the use, misuse or disposal of this product. The buyer or user is responsible to comply with all federal, state or local regulations concerning the use, misuse or disposal of these products.



SAFETY DATA SHEET

DRAFT VERSION



TRANSARMOUR

1. Identification

Product identifier WEB-10X Primer PART B
Other means of identification
Product code WEB-10X Primer PART B
Recommended use Coating Component
Recommended restrictions For Labeled Use Only
Manufacturer/Importer/Supplier/Distributor information
Manufacturer
Company name TransArmour, Inc.
Address P.O. Box 2290, Brandon, MS 39043

Contact person Regulatory Affairs
Telephone number 601-214-3435
Emergency telephone # (800) 424-9300
(Only in the event of chemical emergency involving a spill, leak, fire, exposure or accident involving chemicals)

2. Hazard(s) identification

Physical hazards Not classified.
Health hazards Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 1
Sensitization, skin Category 1
Environmental hazards Hazardous to the aquatic environment, acute hazard Category 3
OSHA defined hazards Not classified.
Label elements



Signal word Danger
Hazard statement Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Harmful to aquatic life.
Precautionary statement
Prevention Avoid breathing mist or vapor. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear eye protection/face protection. Wear protective gloves.
Response If on skin: Wash with plenty of water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Storage Store away from incompatible materials.

Disposal	Buyer assumes all risk and liability associated with disposal of this product (original concentration or dilution) in violation of applicable law in compliance with applicable federal, state and local requirements. CONTAINER DISPOSAL: Triple rinse (or equivalent), then offer clean, dry container for recycling or reconditioning.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Poly (oxy (methyl-1,2-ethanediyl), alpha-(2-aminomethylethyl)-omega-(2-aminomethylethoxy))		9046-10-0	3 - < 5
Benzyl Alcohol		100-51-6	1 - < 3
Tetraethylenepentamine		112-57-2	1 - < 3
Other components below reportable levels			90 - 100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
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Methods and materials for containment and cleaning up

This product is miscible in water. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling

Do not get this material in contact with eyes. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. AIHA Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value	Form
Benzyl Alcohol (CAS 100-51-6)	TWA	44.2 mg/m3	
Tetraethylenepentamine (CAS 112-57-2)	TWA	10 ppm	Aerosol.
		5 mg/m3	
		1 ppm	Aerosol.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

US WEEL Guides: Skin designation

Tetraethylenepentamine (CAS 112-57-2) Can be absorbed through the skin.

Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash fountain and emergency showers are recommended.

Individual protection measures, such as personal protective equipment

Eye/face protection

Wear safety glasses with side shields (or goggles) and a face shield. Face shield is recommended. Avoid contact with eyes.

Skin protection

Hand protection

Wear appropriate chemical resistant gloves.

Other

Not normally needed.

Respiratory protection

Not normally required with adequate ventilation.

Thermal hazards

None known.

General hygiene considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Light yellow liquid

Physical state

Liquid.

Form

Liquid.



Color	Light yellow.
Odor	Odorless.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	Not applicable / Not available
Initial boiling point and boiling range	212 °F (100 °C) estimated
Flash point	> 200.0 °F (> 93.3 °C) Tag Closed Cup
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available
Vapor density	Not available
Relative density	1.02 at 77°
Solubility(ies)	
Solubility (water)	Dispersable
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	150 mPa·s
Other information	
Density	8.49 lb/gal
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Percent volatile	Not available

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage.
Ingestion	Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.
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Information on toxicological effects



Acute toxicity Components	Species	Test Results
Benzyl Alcohol (CAS 100-51-6)		
Acute		
Dermal		
LD50	Rabbit	2000 mg/kg
Oral		
LD50	Rat	1230 - 3100 mg/kg
Tetraethylenepentamine (CAS 112-57-2)		
Acute		
Dermal		
LD50	Rabbit	0.66 g/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Not classifiable as to carcinogenicity to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Not listed.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not listed.	
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	
Not regulated.	
Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Not an aspiration hazard.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Product	Species	Test Results
Ecotoxicity Harmful to aquatic life.		
WEB-10X Primer PART B		
Aquatic		
Fish	LC50	6647.478 mg/l, 96 hours estimated
Components		
Benzyl Alcohol (CAS 100-51-6)		
Aquatic		
Fish	LC50	10 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)



Benzyl Alcohol
Tetraethylenepentamine

1.1
1.503



Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local disposal regulations	Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT	Not regulated as dangerous goods.
IATA	Not regulated as dangerous goods.
IMDG	Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.



International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	Draft version.
Version #	Draft version.
HMIS® ratings	Health: 3 Flammability: 0 Physical hazard: 0

Disclaimer

No representations or warranties, either express or implied, of merchantability, fitness for a particular purpose, or of any nature are made with respect to the product(s) or information contained in this material safety data sheet. The information and recommendations contained in this Material Safety Data Sheet are supplied pursuant to 29 CFR 1910.1200 of the Occupational Safety and Health Standards Hazard Communication Rule. All information contained herein is presented in good faith and is believed to be appropriate and accurate. The buyer or user assumes all risks associated with the use, misuse or disposal of this product. The buyer or user is responsible to comply with all federal, state or local regulations concerning the use, misuse or disposal of these products.



2.1 VOC Corrosion Resistant Epoxy Primers

10X White Epoxy Primer

10X PRIMER

The 10X Primer provides a range of performance features that include excellent adhesion and chemical resistance and outstanding corrosion protection when applied over properly prepared steel and aluminum.

At 2.1 lbs/gal VOC as blended or when further reduced with exempt solvents, this series is lead and chrome-free and offers high build properties. Its excellent sag resistance and fill properties make this primer well suited for application over a sandblasted profile.

Note: For acceptable compatibility between this primer and CPC topcoats please see the CPC Primer/Topcoat compatibility chart (CPCTB01).

Features and Benefits:

- Capable of high film build
- Provide excellent adhesion
- Provide strong corrosion and chemical resistance
- Are plural component capable
- CRE standard primers can be intermixed
- *Tintable version is tinted with 7 ounces of H series tints to create custom colors.
- May be used over ZNP Series zinc rich primers

Associated Products:

- 10X 2.1 VOC White Epoxy Primer
- **Exempt Solvent:** Q30 - Acetone
- **Non-Exempt Solvents*:** Q50 - Aromatic 100, Q60 - MEK, Q70 - MAK, Q80 - Xylene, Q160 - Aromatic 150
- * Addition results in VOC greater than 2.1 lbs/gal

Physical Constants: All values are theoretical, depend on color and are Ready-to-Spray. Actual values could vary slightly due to manufacturing variability.

	10X	10X	10X	10X
Percent solids (by weight)	66.6 – 70.0	70.2 – 72.6	63.5 – 66.0	62.8 – 65.9
Percent solids (by volume)	53.4 – 56.5	60.7 – 62.8	52.0 – 53.8	52.0 – 53.8
HAPs (lbs/gallon of product)	≤ 1.1	≤ 1.0	≤ 1.0	≤ 1.9
Photo-chemically reactive	Yes	Yes	Yes	Yes
RTS Combinations:	10X	10X	10X	10X
Volume Ratio:	As is	2 : 1	2 : 1 : 1/2	2 : 1 : 1/2
Applicable Use Category	Primer	Primer	Primer	Primer
VOC Actual	194 – 222 g/L 1.62 – 1.85 lbs/gal	197 – 216 g/L 1.65 – 1.80 lbs/gal	169 – 185 g/L 1.42 – 1.55 lbs/gal	284 – 312 g/L 2.38 – 2.61 lbs/gal
VOC Regulatory (less water less exempt)	244 – 277 g/L 2.04 – 2.31	229 – 249 g/L 1.91 – 2.08	229 – 249 g/L 1.91 – 2.08	321 – 352 g/L 2.68 – 2.94
Density	1372 – 1461 g/L 11.45 - 12.19 lbs/gal	1255 – 1315 g/L 10.47 – 10.97 lbs/gal	1188 – 1239 g/L 9.91 – 10.34 lbs/gal	1190 – 1253 g/L 9.93 – 10.46 lbs/gal
Volatiles wt. %	30.0 – 33.4	27.4 – 29.8	34.0 – 36.4	34.1 – 37.2
Water wt. %	0.3 – 0.8	0.2 – 0.6	0.2 – 0.6	0.2 – 0.6
Exempt wt. %	15.4 – 17.8	11.4 – 13.0	19.5 – 21.1	10.2 – 11.8
Water vol. %	0.4 – 1.2	0.3 – 0.8	0.3 – 0.7	0.2 – 0.7
Exempt vol. %	17.3 – 20.8	11.5 – 13.8	24.1 – 26.1	9.9 – 11.9

Flashpoint: 10X = 65°F (18°C)



10X PRIMER

Directions for Use

Substrate Preparation:

The surface to be coated must be abraded or sandblasted and free of all contamination (including dust, dirt, oil, grease and oxidation). A chemical treatment (or conversion coating) will improve adhesion and performance properties of the finished coat. Variability can occur with substrates, preparation, application method or environment. We recommend that adhesion and system compatibility be checked prior to full application.

Substrate	Direct to Substrate	Substrate	Direct to Substrate
Cold Rolled Steel	Excellent	Galvanized	Excellent
Hot Rolled Steel	Excellent	Aluminum	Excellent
Stainless Steel	Excellent	Plastic / Fiberglass	Surface should be free of all contamination. Because of the variability of plastic/fiberglass substrates, coating performance should be confirmed on the actual plastic/fiberglass substrate being used.
Galvaneal	Excellent		

* It is recommended that the substrate be cleaned with SSPC-SPC2 Hand Tool or SSPC-SPC3 Power Tool clean Minimum. For best performance, a minimum blast of SSPC-SP6 (NACE#3), Commercial Blast Cleaning is recommended.

Mix Directions:



Mix Directions Thoroughly agitate component A on mechanical shaker prior to mixing. Stir thoroughly before and occasionally during use.

Thinning: To maintain 2.1 VOC, Q30 (Acetone) or other exempt solvents may be used. To achieve 2.8 VOC, 1/2 part of Non-Exempt Solvent may be used. When applying with airless equipment reduction may not be necessary.



Blend Ratio **C10X : CRE-211H : Optional Regular or Exempt Solvent**
2 : 1 : 1/2



Pot Life @ 77°F (25°C): 2 hours when reduced with any approved exempt or non-exempt solvent
Spray Viscosity Range: #3 Zahn = 10 – 20 seconds
Shelf Life: (each component unopened) 10X- 4 years in gallon containers, 2 years in 5-gallon containers
10X Catalyst - 2 years

Application Equipment:



Conventional (with or without pressure pot): 1.4 – 1.8 mm needle/nozzle with 50 – 70 psi at the gun
HVLV (with or without pressure pot): 1.3 – 1.6 mm needle/nozzle with 10 psi at cap or per manufacturer
Airless: 0.013 – 0.017 tip with a fluid pressure of 2000 – 2400 psi
Air-Assisted Airless: 0.013 – 0.017 tip with a fluid pressure of 1520 – 1800 psi with 25 – 30 psi air pressure
Brush or Roll: Apply blended 10X using a high quality natural bristle brush or with a 3/8 solvent resistant nap roller, rolling in one direction. 10X may be reduced 10 – 15% with the slower evaporating Q-code solvents for ease of leveling and flow.
* Use of these solvents will result in a blended VOC greater than 2.1 lbs/gal.
Electrostatic: Minimum 1.5 mm tip with recommended reduction ratio using Q30, Q60 or Q70 solvent.

Application:



Apply: 1 – 2 wet coats with a 10 – 15 minute flash between coats. Apply only when air, product and surface temperatures are above 60°F (16°C) and when surface temperature is at least 5°F (3°C) above the dew point.

	10X	10X : Exempt Solvent
Recommended Total Wet Film Build:	3 – 13 mils	4 – 15 mils
Recommended Total Dry Film Build:	2 – 8 mils	2 – 8 mils
Square Foot Coverage @ 1mil no loss:	973 – 1007 sq. ft. (dependent on color)	834 – 863 sq. ft. (dependent on color)

Dry Times:



Air Dry @ 77°F (25°C) 50% RH*:
To Touch 90 – 120 minutes
To Handle 2 – 3 hours*
To Recoat 1 hour – 4 days. After 4 days the primer must be sanded before recoating.
To Topcoat 1 hour – 4 days. Medium to full wet coats should be applied. After 4 days, the primer must be sanded before topcoating.
This CRE primer may be recoated with itself up to 2 weeks after initial application without sanding as long as the primer remains free of contaminants. Primed surface may be cleaned with an appropriate CFX cleaner if necessary before topcoating.

Force Dry @ 140°F (60°C): 40 minutes at 140°F (60°C) after 15 minute flash at 77°F (25°C)

* Paint film is not fully cured for 7 days. Drying time varies, depending upon film build, color selection, temperature, humidity and degree of air movement.



10X PRIMER

Technical Data*

Performance Properties:

In Service Temperature Limit

Complete paint system, including appropriate topcoat, dry temperature limit = 300°F. (149°C).
If the in-service part has primer only, the color of the primer will change as you approach 300°F. Primer integrity will be maintained up to 300°F. If the primed part has been exposed to elevated temperatures for any extended period of time, the part must be cleaned and sanded prior to topcoating.

Technical Properties:

BONDERITE® 1000
10X
No Topcoat

Test	ASTM Method	Results
Pencil Hardness	D3363	F
Adhesion	D3359	5B
Chip Resistance	D3170	6

Chemical Resistance:

Bonderite 1000
10X
No Topcoat

Chemical	ASTM Method	Result
Toluene	D1308	Very Slight Ring
10% NaOH (Sodium Hydroxide)	D1308	Pass
10% HCl (Hydrochloric acid)	D1308	Slight gloss loss
10% H ₂ SO ₄ (Sulphuric acid)	D1308	Moderate gloss loss
Gasoline	D1308	Pass
Isopropanol	D1308	Pass
Water**	D1308	Pass

** Although resistant to intermittent exposure, this product is not recommended for immersion.

Weather Resistance:

Salt Spray System:
Blasted Hot Rolled Steel
10X
AUE-300 Urethane

	ASTM Method	Result
Salt Spray – 1000 hours	B117	
Corrosion Creep***	D1654	9A
Scribe Blisters	D714	4F
Face Blisters	D714	None

*** Results based upon 4 – 5 mils DFT.

Humidity System:
Bonderite 1000
10X
AUE-300 Urethane

	ASTM Method	Result
Humidity – 100 hours	D2247	
5 Minute Recovery Adhesion	D3359	5B
1 Hour Recovery Adhesion	D3359	5B
24 Hour Recovery Adhesion	D3359	5B

All tests results assume proper cure and preparation of test substrates. Unless otherwise stated, all results were obtained spraying product direct to metal on Bonderite 1000.

* The application and performance property data above are believed to be reliable based on laboratory findings. It is for the buyer to satisfy itself on the suitability of the product for its particular use. Variation in environment, procedures of use, or extrapolation of data may cause unsatisfactory results.



10X PRIMER

**2.1 VOC Corrosion
Resistant Epoxy Primers**

Health and Safety:



Please refer to Material Data Safety Sheets (MSDS) for full health safety details and storage regulations.

See Material Safety Data Sheet and Labels for additional safety information and handling instructions.

EMERGENCY MEDICAL OR SPILL CONTROL INFORMATION (412) 434-4515. IN CANADA (514) 645-1320.

Materials described are designed for application by professional, trained personnel using proper equipment and are not intended for sale to the public. Products mentioned may be hazardous and should only be used according to directions, while observing precautions and warning statements listed on label. Statements and methods described are based upon the best information and practices known to TransArmour. Procedures for applications mentioned are suggestions only and are not to be construed as representations or warranties as to performance, results, or fitness for any intended use, nor does TransArmour warrant freedom from patent infringement in the use of any formula or process set forth herein.



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