CROSSFIELD PRODUCTS CORPORATION

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140 Valley Rd.
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SAFETY DATA SHEET

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**Epox-O-Fill, Part B**
CHEMICAL NAME/CLASS:	Polyamine Solution
PRODUCT USE:	Decking Basecoat Curative
SUPPLIER/MANUFACTURER'S NAME:	Crossfield Products Corp.
ADDRESS: (West Coast):	3000 E. Harcourt St. Rancho Dominguez, CA 90221 (Headquarters)
ADDRESS: (East Coast):	140 Valley Rd. Roselle Park, NJ 07204
EMERGENCY PHONE:	**CHEMTREC**: 800-424-9300
DATE OF PREPARATION:	October 5, 2016
REVISION DATE:	July 21, 2020

2. HAZARD(S) IDENTIFICATION

GHS Classification:

Acute toxicity – Oral Category 4
Acute toxicity – Dermal Category 3
Skin corrosion – Category 1B
Serious Eye Damage – Category 1
Skin sensitization - Category 1
Reproductive toxicity - Category 2
Effects on or via lactation

Signal Word: (Danger)

Hazard Statements:

H302: Harmful if swallowed
H312: Harmful in contact with skin
H317: May cause an allergic skin reaction
H360: May damage fertility or the unborn child
H362: May cause harm to breast=fed children

Precautionary Statements:

P201: Obtain special instruction before use.
P202: Do not handle until all safety precautions have been read and understood
P261: Avoid breathing dust/fume /gas/mist/vapors/spray
P263: Avoid contact during pregnancy/while nursing
P264: Wash hands thoroughly after handling
P270: Do not eat, drink, or smoke when using this product
P272: Contaminated work clothing should not be allowed our of the workplace
P280: Wear protective gloves/protective clothing/eye protection/face protection

Response Statements:

P301+P312+P330: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
P301+P330+P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340+P310: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305+P351+P338+P310: 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.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P333+P313: If skin irritation or rash occurs: Get medical advice/attention.
P363: Wash contaminated clothing before reuse

P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

HMIS-RATINGS (SCALE 0 – 4)

HEALTH	3
FLAMMABILITY	1
REACTIVITY	0

Health = 3
Fire = 1
Reactivity = 0

NFPA RATING

EMERGENCY OVERVIEW:

For Routine Industrial Applications
SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant route of occupational overexposure is contact with skin. The symptoms of overexposure to this product are as follows:

EYE CONTACT: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. May cause blindness.

INHALATION: Can cause severe eye, skin and respiratory tract burns.

CONTACT WITH SKIN: Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage. Prolonged skin contact is unlikely to result in absorption of harmful amounts.

INGESTION: Though ingestion is not anticipated to be a significant route of over-exposure to this product, if ingestion does occur, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach. Harmful if swallowed.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in **Lay Terms**.

ACUTE: Contact with this solution may cause irritation of the eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty

CHRONIC: Repeated skin contact with this product may result in dermatitis (inflammation and reddening of the skin).

3. COMPOSITION / INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			
			TLV mg/m^3	STEL mg/m^3	PEL mg/m^3	STEL mg/m^3	IDLH mg/m^3	OTHER mg/m^3
Triethylenetetramine	112-24-3	30 - 50	NE	NE	NE	NE	NE	(WEEL) TWA 1.0 ppm
Nonylphenol	84852-15-3	20 - 40	NE	NE	NE	NE	NE	NE
Polyoxypropylene diamine	9046-10-0	20 - 40	NE	NE	NE	NE	NE	NE
Diethylenetriamine	111-40-0	.01 - 0.5	TWA 1.0 ppm	NE	1.0 ppm / 4 mg/m3	NE	NE	(NIOSH) TWA 1.0 ppm 4 mg/m3
Aminoethylethanolamine	111-41-1	0.1 - 0.8	NE	NE	NE	NE	NE	NE
Tetraethlenepentamine mixture	112-57-2	0.1 - 0.5	NE	NE	NE	NE	NE	(WEEL) TWA 5.0 mg/m3
n-(2-Aminoethyl)piperazine	140-31-8	0.1 - 0.5	NE	NE	NE	NE	NE	NE
DINONYLPHENOL	1323-65-5	0.0 - 0.5	NE	NE	NE	NE	NE	NE
Water and other ingredients. The other ingredients are each present in less than 1 percent concentration in this product.		Balance	The components present in the balance of this product do not contribute any significant, additional hazards. All hazard information pertinent to this product has been presented in the remaining sections of this Material Safety Data Sheet, per the requirements of Federal Occupational Safety and Health Hazard Communication Standard (29 CFR 1910.1200).					
VOC: Component = 0 Grams/Liter		As Applied – 3 Grams/Liter (Part of Multi-Component System)						

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.
NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1993 format.

4. FIRST-AID MEASURES

GENERAL ADVICE: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section * for specific personal protective equipment.

SKIN EXPOSURE: For Skin contact, if available, wash with large amounts of running water and soap for 15 minutes. Remove contaminated clothing and shoes. Get immediate medical attention. Discard or decontaminate clothing before re-use, and destroy contaminated shoes.

EYE EXPOSURE: For eye contact, immediately flush eyes for at least 15 minutes with running water. Hold eyelids apart to ensure rinsing of the entire eye surface and lids with water. Get immediate medical attention.

INHALATION: If inhaled, remove from area to fresh air. If not breathing, give artificial respiration. Get immediate medical attention. If breathing is difficult, transport to medical care and, if available, give supplemental oxygen.

INGESTION: If swallowed, immediately give at least 3-4 glasses of water, but do not induce vomiting. If vomiting occurs, give fluids again. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention. Have physician determine whether vomiting or stomach evacuation is necessary.

NOTES TO PHYSICIAN: Application of corticosteroid cream has been effective in treating skin irritation..

5. FIRE-FIGHTING MEASURES

FLASH POINT, °C (method): >93.4°C (>200.1°F) Closed Cup
AUTOIGNITION TEMPERATURE, °C: ND
FLAMMABLE LIMITS (in air by volume, %):

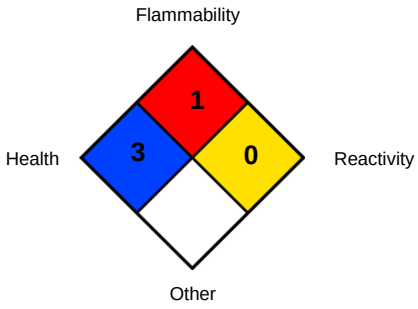
Lower (LEL): NE
Upper (UEL): NE

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES
Foam: YES
Halon: ND

Carbon Dioxide: YES
Dry Chemical: YES
Other: Any "ABC" Class.

NFPA RATING



UNUSUAL FIRE AND EXPLOSION HAZARDS: Run-off from fire control may cause pollution. Keep fire-exposed containers cool with water spray to prevent rupture due to excessive heat. High pressure water hose may spread product from broken containers increasing contamination. If involved in a fire, this product may decompose to produce a variety of compounds (i.e. carbon monoxide, carbon dioxide, aldehydes, nitrogen oxides and compounds). Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding. Products of combustion are irritating to the respiratory tract and may cause breathing difficulty. Symptoms may be delayed several hours or longer depending upon the extent of exposure.

Explosion Sensitivity to Mechanical Impact: Not sensitive.
Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Incipient fire responders should wear eye protection. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move fire-exposed containers, if it can be done without risk to firefighters. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, discard or decontaminate fire response equipment before returning such equipment to service.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area, protect people, and respond with trained personnel.

The proper personal protective equipment for incidental releases (e.g.-1 L of the product released in a well-ventilated area) use impermeable gloves, specific for the material handled, goggles, face shield, and appropriate body protection. In the event of a large release, use impermeable gloves, specific for the material handled, chemically resistant suit and boots, and hard-hat. Self Contained Breathing Apparatus or respirator may be required where engineering controls are not adequate or conditions for potential exposure exist. When respirators are required, Select NIOSH/MSHA approved based on actual or potential airborne concentrations in accordance with latest OSHA and/or ANSI recommendations.

Absorb spilled liquid with polypads or other suitable absorbent materials. Neutralize residue with sodium bicarbonate and water rinse. Decontaminate the area thoroughly. Test area with litmus paper to confirm neutralization. Place all spill residue in a suitable container. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations).

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling this product. Do not eat or drink while handling this material. Remove contaminated clothing immediately. Discard contaminated clothing items, or launder before re-use. Inform anyone handling such contaminated laundry of the hazards associated with this product. Use ventilation and other engineering controls to minimize potential exposure to this product.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Avoid breathing mists or sprays generated by this product. Use in a well-ventilated location.

For Non-Bulk Containers: Open containers slowly, on a stable surface. Containers of this product must be properly labeled. Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers, or in a diked area, as appropriate. Store containers away from incompatible chemicals. Keep container tightly closed when not in use. Wash thoroughly after using this material. Storage areas should be made of fire-resistant materials. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Empty containers may contain residual liquid, therefore, empty containers should be handled with care.

Bulk Containers: All tanks and pipelines which contain this material must be labeled. Perform routine maintenance on tanks or pipelines which contain this product. Report all leaks immediately to the proper personnel.

Tank Car Shipments: Tank cars carrying this product should be loaded and unloaded in strict accordance with tank-car manufacturer's recommendation and all established on-site safety procedures. Appropriate personal protective equipment must be used (see Section 8, Engineering Controls and Personal Protective Equipment.). All loading and unloading equipment must be inspected, prior to each use. Loading and unloading operations must be attended, at all times. Tank cars must be level, brakes must be set or wheels must be locked or blocked prior to loading or unloading. Tank car (for loading) or storage tank (for unloading) must be verified to be correct for receiving this product and be properly prepared, prior to starting the transfer operations. Hoses must be verified to be clean and free of incompatible chemicals, prior to connection to the tank car or vessel. Valves and hoses must be verified to be in the correct positions, before starting transfer operations. A sample (if required) must be taken and verified (if required) prior to starting transfer operations. All lines must be blown-down and purged before disconnecting them from the tank car or vessel.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided. Decontaminate equipment before maintenance begins by a triple-rinse with water followed, if necessary, by using sodium bicarbonate and an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: If required use a corrosion-resistant ventilation system separate from other exhaust ventilation systems to ensure that there is no potential for overexposure to sprays, or mists of this product and that exposures are below those in section 2 (Composition and Information on Ingredients). Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients). If respiratory protection is needed, use only protection authorized in 29 CFR 1910.134, or applicable State regulations. If adequate ventilation is not available or if there is potential for airborne exposure above the exposure limits (listed in Section 2) a respirator may be worn up to respirator exposure limitations, check with respirator equipment manufactures recommendations/limitations. For a higher level of protection use positive pressure supplied air respiration protection or Self Contained Breathing Apparatus or if oxygen levels are below 19.5% or are unknown.

EMERGENCY OR PLANNED ENTRY INTO UNKNOWN CONCENTRATIONS OR IDLH CONDITIONS:

Positive pressure, full-facepiece Self Contained Breathing Apparatus; or positive pressure, full-facepiece Self Contained Breathing Apparatus with an auxiliary positive pressure Self Contained Breathing Apparatus.

EYE PROTECTION: Splash goggles or safety glasses. Face-shields are recommended when the operation can generate splashes, sprays or mists.

HAND PROTECTION: Wear appropriate gloves for routine industrial use. Use appropriate gloves for spill response, as stated in Section 6 of this MSDS (Accidental Release Measures).

BODY PROTECTION: Use body protection appropriate for task. Cover-all, rubber aprons, or chemical protective clothing made from natural rubber are generally acceptable, depending upon the task.

Vapor Respirator

Safety Glasses

Safety Gloves

Synthetic Apron

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): ND
SPECIFIC GRAVITY (water = 1): 0.95
SOLUBILITY IN WATER: Slightly soluble.
VAPOR PRESSURE, mm Hg @ 20 °C: nd
ODOR : Amine
LOG WATER/OIL DISTRIBUTION COEFFICIENT: Not available.

EVAPORATION RATE (n-BuAc=1): ND
MELTING/FREEZING POINT: Not established.
BOILING POINT: .121°C (>250°F)
pH: Not Established

APPEARANCE AND COLOR: Clear to hazy amber liquid
HOW TO DETECT THIS SUBSTANCE (warning properties): ND

10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Thermal decomposition products of this solution can include a variety of compounds. (i.e. Aromatic compounds, Ammonia, Hydrocarbons, Volatile Amines, and Phenolics).

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Avoid contact with acids, acrylates, air, alcohols, aldehydes, halogenated hydrocarbons, ketones, nitrites. Avoid contact with metals such as: brass, bronze, copper, copper alloys.

HAZARDOUS POLYMERIZATION: Will not occur by itself.

CONDITIONS TO AVOID: Avoid exposure or contact with air (oxygen). Exposure to elevated temperatures can cause product to decompose.

11. TOXICALOGICAL INFORMATION

TOXICITY DATA: Additional toxicology information for components greater than 1 percent in concentration is provided below.

Triethylenetetramine: (112-24-3)

Acute Oral Toxicity: LD50: 2,500 mg/kg (Species – Rat)
Acute Dermal Toxicity LD50: 550 mg/kg (Species – Rabbit)
Skin corrosion/irritation: Severe skin irritation (Rabbit – 24 h)
Serious eye damage/eye irritation: Severe eye irritation (Rabbit – 24 h)

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Additional Information:

RTECS: YE6650000
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Nonylphenol: (84852-15-3)

Acute Oral Toxicity: LD50: 1,412 mg/kg (Species – Male and Female Rat)
Skin corrosion/irritation: Causes burns – 4h (Species – Rabbit) OECD Test Guideline 404)
Serious eye damage/eye irritation Corrosive – 72h (Species – Rabbit) OECD Test Guideline 405)
Respiratory or skin sensitization Does not cause skin sensitization
Maximization Test (GPMT) (Species – guinea pig) OECD Test guideline 406

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

Suspected human reproductive toxicant
Rat – Oral Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Physical

Additional Information:

RTECS: N/A
Repeated dose toxicity – Rat – male and female – No observed adverse effect level – 10 mg/kg – Lowest observed adverse effect level – 50 mg/kg
Cough, Shortness of breath, Headache, Nausea, vomiting to the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Poly[oxy(methyl-1,2-ethanediyl)],alpha,-(2-aminomethylethyl)-,omega.-(2-aminomethylethoxy)-: (9046-10-0)

Acute Oral Toxicity:	LD50: 2,885.3 mg/kg	(Species – Rat)
Acute Inhalation:	LC50: >0.74 mg/l (8 h)	(Species – Rat)
Acute Dermal:	LD50: 2,980 mg/kg	(Species – Rabbit)
Skin corrosion/irritation:	Corrosive, category 1C	(Species – Rabbit) OECD Test Guideline 404
Serious eye damage/eye irritation:	Corrosive to eyes	(Species – Rabbit) OECD Test Guideline 405
Respiratory or skin sensitization	No data	
Germ cell mutagenicity:	Animal testing did not show any mutagenic effects Not mutagenic in AMES Test.	

Carcinogenicity:

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity	No data
Specific target organ toxicity – single exposure:	No data
Specific target organ toxicity – repeated exposure:	No data
Aspiration hazard	No data

Additional Information:

RTECS: Not available

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

Stomach – Irregularities – Based on Human Evidence

Diethylenetriamine (111-40-0)

Acute Oral Toxicity	LD50: 1,080 mg/kg	(Species – Rat) Remarks: Behavioral: Convulsions or effect on seizure threshold.
Inhalation:	LC50 (4h): 0.3 mg/l	(Species – Rat) Remarks: Lungs, Thorax, or Respiration: Acute pulmonary edema.
Acute Dermal Toxicity	LD50: 1,090 mg/kg	(Species – Rabbit)
Skin corrosion/irritation:	Skin – Rabbit Result: Open irritation test	
Serious eye damage/eye irritation:		No data available
Respiratory or skin sensitization:		No data available
Germ cell mutagenicity:		No data available
Reproductive toxicity:		No data available
Specific target organ toxicity – single exposure		No data available
Specific target organ toxicity – repeated exposure		No data available
Aspiration hazard		No data available

Carcinogenicity:

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Additional Information:

RTECS: IE1225000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

Stomach – Irregularities – Based on Human Evidence

Aminoethylethanolamine (111-41-1)

Acute Oral Toxicity	LD50: 3,000 mg/kg	(Species – Rat)
Inhalation:	No data available	
Acute Dermal Toxicity	LD50: 2,250 mg/kg	(Species – Rat)
Skin corrosion/irritation:	Skin – Rabbit	No data available
Serious eye damage/eye irritation:		No data available
Respiratory or skin sensitization:		No data available
Germ cell mutagenicity:		No data available
Reproductive toxicity:		No data available – Clear evidence of adverse effects on development, based on animal experiments. Some evidence of adverse effects on sexual function and fertility, based on animal experiments.
Specific target organ toxicity – single exposure		No data available
Specific target organ toxicity – repeated exposure		No data available
Aspiration hazard		No data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Additional Information:

RTECS:KJ6300000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, shortness of breath, headache, nausea.

Tetraethylenepentamine: (112-57-2)

Acute Oral Toxicity:	LD50: 3,990 mg/kg	(Species – Rat)

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Additional Information:

RTECS: KH8585000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea

1-(2-Aminoethyl)piperazine (140-31-8)

Acute Oral Toxicity	LD50: 2,097 mg/kg	(Species – Rat)
Inhalation:		No data available
Acute Dermal Toxicity	LD50: 866 mg/kg	(Species – Rabbit)
Skin corrosion/irritation:	Skin – Rabbit	Result: Corrosive -4h
Serious eye damage/eye irritation:		(Species Rabbit): Result – Risk of serious damage to eyes.
Respiratory or skin sensitization:		Maximization Test – guinea pig Result: May cause sensitization by skin contact. (OECD Test Guideline 406)
Germ cell mutagenicity:		Hamster – ovary Result: negative Mouse – male and female Result: negative
Reproductive toxicity:		No data available – Rat oral, Paternal Effects: spermatogenesis (including genetic material, sperm morphology, motility, and count).
Specific target organ toxicity – single exposure		No data available
Specific target organ toxicity – repeated exposure		No data available
Aspiration hazard		No data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 01% is identified as a carcinogen or potential carcinogen by OSHA.

Additional Information:

RTECS: TK8050000

Specific Target Organ Systemic Toxicity (Single Exposure)

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Specific Target Organ Systemic Toxicity (Repeated Exposure)

Contains component(s) which have been reported to cause effects on the following organs in animals: Liver, Lung, Gastrointestinal tract, Kidney.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: Based on information for component(s): In vitro genetic toxicity studies were positive. Animal genetic toxicity studies were inconclusive.

Embryotoxicity: This product is not reported to produce embryotoxic effects in humans.

Teratogenicity: Contains component(s) which caused birth defects in laboratory animals. Contains component(s) which have been toxic to the fetus in lab animal tests. Laboratory animals that were fed exaggerated doses of Triethylenetetraamine (TETA) showed adverse fetal effects that were believed to be associated with an observed copper deficiency. In an oral gavage screening study, DETA has been toxic to the fetus in laboratory animal tests.

Reproductive Toxicity: Contains component(s) which have interfered with fertility in animal studies. In a three-generation reproduction study in rats, nonylphenol did not interfere with standard reproductive parameters. However, some additional endpoints which are considered markers of potential reproductive toxicity were affected at higher doses that produced systemic toxicity to the parent animals.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

12. ECOLOGICAL INFORMATION

Triethylenetetramine: (112-24-3)

Toxicity:	No Data
Persistence and degradability	No Data
Bioaccumulative potential	No data
Mobility in soil	No data
Results of PBT and vPvB assessment:	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.
	No data available

Nonylphenol: (84852-15-3)

Toxicity:

Toxicity to fish:	LC50 – Lepomis macrochirus (Bluegill)	0.209 mg/l – 96 h
Toxicity to daphnia and Other aquatic Invertebrates	EC50 – Daphnia magna (Water flea)	0.0844 mg/l – 24 h
Toxicity to algae	IC50 (static test) – Selenastrum capricornutum (Green algae)	0.33 mg/l – 72 h

Persistence and degradability

Biodegradability	Biotic/Aerobic – Exposure time 28 d (OECD Test guideline 301F) Remarks The 10 day time window criterion is not fulfilled	Result: 62% - Readily biodegradable

Bioaccumulative potential

Bioaccumulation	Pimephales promelas (fathead minnow) – 28 d	Bioconcentration factor (BCF): 740

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

Poly[oxy(methyl-1,2-ethanediyl)],alpha,-(2-aminomethylethyl)-,omega.-(2-aminomethylethoxy)-: (9046-10-0)

Toxicity:

Toxicity to fish:	semi-static test LC50 – Oncorhynchus mykiss (rainbow trout)	>15 mg/l – 96 h
	static test NOEC – Oncorhynchus mykiss (rainbow trout)	15 mg/l – 96 h
Toxicity to daphnia and Other aquatic Invertebrates	static test EC50 – Daphnia magna (Water flea) (OECD Test Guideline 202)	80 mg/l – 48 h

Persistence and degradability

Biodegradability	Result: 0% - According to the results of tests of biodegradability this product is not readily biodegradable (OECD Test Guideline 301B
Bioaccumulative potential	No data
Mobility in soil	No data
Results of PBT and vPvB assessment:	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

Diethylenetriamine (111-40-0)

Toxicity:	Toxicity to fish: LC50 – Poecilia reticulate (guppy)	1,014 mg/l – 96 h

Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Results of PBT and vPvB assessment	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects	No data available

Aminoethylethanolamine (111-41-1)

Toxicity:	No data available
Persistence and degradability	No data available
Bioaccumulative potential	No data available
Mobility in soil	No data available
Results of PBT and vPvB assessment	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects	No data available

Tetraethylenepentamine: (112-57-2)

Toxicity:

Toxicity to fish:	LC50 – Poecilia reticulata (guppy)	420 mg/l – 96 h
Toxicity to daphnia and Other aquatic Invertebrates	EC50 – Daphnia magna (Water flea)	24 mg/l – 24 h
Toxicity to algae	IC50 – Pseudokirchneriella subcaptiata (green algae)	2 mg/l – 72 h

1-(2-Aminoethyl)piperazine (140-31-8)

Toxicity:

Toxicity to fish:	static test LC50 – Pimephales promelas (fathead minnow) – ca. 2,190 mg/l – 96 h
Toxicity to daphnia and other aquatic Invertebrates	static test LC50 – Daphnia magna (Water flea) – 58 mg/l 48 h (OECD Test Guideline 202)
Toxicity to algae	EC50 – Pseudokirchneriella subcapitata (algae) – 495 mg/l – 72 h (OECD Test Guideline 201)
Toxicity to bacteria	Respiration inhibition EC50 – Bacteria – 511 mg/l – 2 h

Persistence and degradability

Biodegradability	aerobic – Exposure time 28 d Result: 0% - Not readily biodegradable. (OECD Test Guideline 301F)

Bioaccumulative potential	No data available
Mobility in soil	No data available
Results of PBT and vPvB assessment	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. It may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

14. TRANSPORTATION INFORMATION

Department of Transportation:

Proper Shipping Name:	Paint Related Material
Class:	8
UN/ID No.:	UN3066
Packing Group:	II

IMO-IMDG Shipping Data:

Proper Shipping Name:	Paint Related Material
Class:	8
UN/ID No.:	UN3066
Packing Group:	II
Marine Pollutant	Yes (Nonylphenol, Polyoxypropylene diamine)

IATA/ICAO Shipping Data:

Proper Shipping Name:	Paint Related Material
Class:	8
UN/ID No.:	UN3066
Packing Group:	II

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard
This product is a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to Know Act of 1986) Sections 311 and 312
Acute Health Hazard
Chronic Health Hazard

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
This material does not contain any chemical components with known CAS numbers that exceed th threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

New Jersey Right-to-know: The following is required composition information:

CAS Number:	112-24-3	111-40-0	111-41-1
RTK No.	1908	0700	0074
Common Name:	Triethylenetetramine	Diethylenetriamine	Aminoethylethanolamine

CAS Number:	112-57-2	140-31-8
RTK No.	1816	0075
Common Name:	Tetraethylenepentamine	N-Aminoethylpiperazine

Pennsylvania Right-to-know: The following is required composition information:

CAS Number:	112-24-3	111-40-0	111-41-1
Common Name:	Triethylenetetramine	Diethylenetriamine	Aminoethylethanolamine

CAS Number:	112-57-2	140-31-8
Common Name:	Tetraethylenepentamine	N-Aminoethylpiperazine

CALIFORNIA PROPOSITION 65: Not listed.

Canadian DSL: All components of this product are on the Canadian DSL.
WHMIS:

D1B - Poisonous and infectious material - Immediate and serious effects - Toxic
D2B - Poisonous and infectious material - Other effects - Toxic
E - Corrosive material

WHMIS 1988 Health Effects Criteria Met by this Chemical:
D1B - Acute lethality - toxic - immediate
D2B - Skin Sensitization - toxic - other
E - Corrosive to skin
E - TDG class 8 - corrosive substance

WHMIS 1988 Ingredient Disclosure List:
Included for disclosure at 0.1% or greater.

16. OTHER INFORMATION

PREPARED BY: BILL BEACH CROSSFIELD PRODUCTS CORP,

THIS INFORMATION IS DRAWN FROM RECOGNIZED SOURCES BELIEVED TO BE RELIABLE. CROSSFIELD PRODUCTS CORP. MAKES NO GUARANTEES NOR ASSUMES ANY LIABILITY IN CONNECTION WITH THIS INFORMATION. THE USER SHOULD BE AWARE OF CHANGING TECHNOLOGY, RESEARCH, REGULATIONS AND ANALYTICAL PROCEDURES THAT MAY REQUIRE CHANGES HEREIN. THE ABOVE DATA IS SUPPLIED UPON THE CONDITION THAT PERSONS WILL EVALUATE THIS INFORMATION AND THEN DETERMINE ITS SUITABILITY FOR THEIR USE.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:
ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.
TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous **Ceiling Level**. Skin adsorption effects must also be considered.
OSHA - U.S. Occupational Safety and Health Administration.
PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.
IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. **The DFG - MAK** is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. **O**ccupational **S**afety and **H**ealth **A**dministration (**OSHA**). NIOSH issues exposure guidelines called **R**ecommended **E**xposure **L**evels (**REL**s). When no exposure guidelines are established, an entry of **NE** is made for reference.

HMIS HAZARD RATINGS:
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime over-exposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime over-exposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: **0** (normally stable); 1 (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:
Much of the information related to fire and explosion is derived from the **N**ational **F**ire **P**rotection **A**ssociation (**NFPA**). Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:
Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD_{50}** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC_{50}** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m^3** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause death. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REGULATORY INFORMATION:
This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Other acronyms used are: **Superfund Amendments and Reauthorization Act (SARA)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the **DOT**; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the materials package label.