CROSSFIELD PRODUCTS CORPORATION

www.crossfieldproducts.com

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Rancho Dominguez, CA 90221 (Headquarters)
(310)-886-9100 (8:00 AM – 5:00 PM Pacific Time)

140 Valley Rd.
Roselle Park, NJ 07204
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SAFETY DATA SHEET

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**Terracolor, 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:	Februrary 5, 2009
REVISION DATE:	February 17, 2017

2. HAZARD(S) IDENTIFICATION

GHS Classification:

- Acute toxicity – Oral Category 4
- Acute toxicity – Dermal Category 3
- Skin corrosion – Category 1A
- Serious Eye Damage – Category 1
- Skin sensitization - Category 1
- Reproductive toxicity - Category 2

Signal Word: (Danger)

Hazard Statements:

H302: Harmful if swallowed
H311: Toxic in contact with skin
H314: Causes severe skin burns and eye damage
H317: May cause an allergic skin reaction
H361: Suspected of damaging fertility or the unborn child

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
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
P281: Use personal protective equipment as required

Response Statements:

P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
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: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes Remove contact lenses, if present and easy to do. Continue rinsing.
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

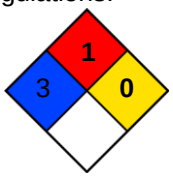
P501: Dispose of contents and container in accordance with all local, regional, national and international regulations.

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/m³	STEL mg/m³	PEL mg/m³	STEL mg/m³	IDLH mg/m³	OTHER mg/m³
Aliphatic Amines	Trade Secret	20 - 35	NE	NE	NE	NE	NE	NE
Benzyl Alcohol	100-51-6	5 - 20	NE	NE	NE	NE	NE	WEEL (TWA) 44.2 (10 ppm)
5-Amino-1,3,3-trimethylcyclohexanemethanamine reaction products with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[ox	68609-08-5	10 - 15	NE	NE	NE	NE	NE	NE
Poly[oxy(methyl-1,2-ethanediyl)], alpha,-(2-aminomethylethyl)-,omega.-(2-aminomethylethoxy)-	9046-10-0	12 - 15	NE	NE	NE	NE	NE	NE
Isophoronediamine	2855-13-2	5 - 10	NE	NE	NE	NE	NE	NE
1,3-Cyclohexanebis(Methylamine)	2579-20-6	5 - 15	NE	NE	NE	NE	NE	TWA (Skin) 0.8 mg/m³ 0.1 ppm
Nonylphenol	84852-15-3	7 - 20	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 – 2 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

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°C (>200°F) Closed Cup
AUTOIGNITION TEMPERATURE, °C: ND
FLAMMABLE LIMITS (in air by volume, %):

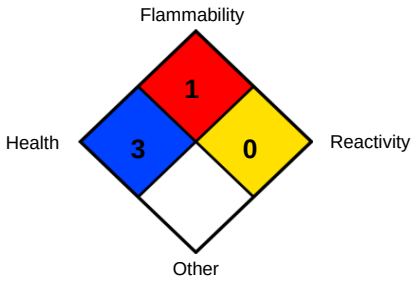
Lower (LEL): NE
Upper (UEL): NE

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): 0.98
SOLUBILITY IN WATER: Slightly soluble.
VAPOR PRESSURE, mm Hg @ 20 °C: 0.8
ODOR : Amine
LOG WATER/OIL DISTRIBUTION COEFFICIENT: Not available.

EVAPORATION RATE (n-BuAc=1): ND
MELTING/FREEZING POINT: Not established.
BOILING POINT: >148°C (>298°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. Nitric acid, Ammonia, Nitrogen Oxides, Carbon Monoxide and other compounds).

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Avoid contact with acids, reactive metals, sodium hypochlorite, peroxides, and oxidizers.

HAZARDOUS POLYMERIZATION: Will not occur by itself. Considerable exothermic reaction with amine resins is possible.

11. TOXICALOGICAL INFORMATION

Toxicity - Components

Benzyl Alcohol: (100-51-6)

Acute Oral Toxicity:	LD50: 1,230 mg/kg	(Species – Male Rat)
Inhalation:	LC50 (4h): > 4.178 mg/l	(Species – Rat) OECD Test Guideline 403
Acute Dermal Toxicity	LD50: > 2,000 mg/kg	(Species – Rabbit)
Skin corrosion/irritation:	No skin irritation (Rabbit – 24 h)	OECD Test Guideline 404
Serious eye damage/eye irritation:	Eye irritation (Rabbit – 24 h)	OECD Test Guideline 405

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: DN315000
Central nervous system depression
Liver – Irregularities – Based on Human Evidence

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.

1,3-Cyclohexanebis(Methylamine): (2579-20-6)

Acute Oral Toxicity: LD50: >300 - 2,000 mg/kg (Species – Female Rat)
Acute Inhalation: No data
Acute Dermal: No data
Skin corrosion/irritation: Causes severe burns, - 3 min (Species – Rabbit) OECD Test Guideline 404
Serious eye damage/eye irritation: No data
Respiratory or skin sensitization Maximization Test – Guinea Pig
Result: Does not cause skin sensitization (OECD Test guideline 406)
Germ cell mutagenicity: Ames Test – S. typhimurium Result: Negative
Mutagenicity (micronucleus test) – Mouse, male and female Result: Negative

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:

Repeated dose toxicity – rat – male and female – Oral – No observed adverse effect level – 60 mg/kg – Lowest observed adverse effect level – 300 mg/kg
RTECS: GU7000000

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

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

Isophoronediamine: (2855-13-2)

Acute Oral Toxicity:	LD50: 1,030 mg/kg	(Species – Male Rat) OECD Test Guideline 401
Acute Inhalation:	LC50: >5.01 mg/l (4 h)	(Species – Male & Female Rate) OECD Test guideline 403
Acute Dermal:	LD50: >2,000 mg/kg	(Species – Male & Female Rate) OECD Test guideline 402
Skin corrosion/irritation:	Causes burns – 24h	(Species – Rabbit)
Serious eye damage/eye irritation	Corrosive – 24 h	(Species – Rabbit) OECD Test Guideline 405
Respiratory or skin sensitization	May cause sensitization by skin contact Maximization Test (GPMT) (Species – guinea pig) OECD Test guideline 406	
Germ cell mutagenicity:	Hamster – ovary	Result: negative
Mutagenicity (micronucleus test):	Mouse (Male & Female)	Result: negative

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: GV5020833

5-Amino-1,3,3-trimethylcyclohexanemethanamine reaction products with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[ox: (68609-08-5)

No data

SUSPECTED CANCER AGENT: The major components of this product are not found on the following lists: FEDERAL OSHA Z LIST, NTP, IARC, CAL/OSHA in concentrations > 0.1 %; and are therefore not considered to be, nor suspected to be, cancer-causing agents by these agencies.

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

Components

Benzyl Alcohol: (100-51-6)

Toxicity:		
Toxicity to fish:	LC50 – Lepomis macrochirus (Bluegill)	10 mg/l – 96 h
	LC50 – Pimephales promelas (fathead minnow)	460 mg/l – 96 h
Toxicity to daphnia and	EC50 – Daphnia magna (Water flea)	55 mg/l – 24 h
Other aquatic Invertebrates	Daphnia magna (Water flea) 230 mg/l – 48 h (OECD Test Guideline 202)	
Toxicity to algae	IC50 – Algae	700 mg/l – 72 h
Persistence and degradability		
Biodegradability	Biotic/Aerobic – Exposure time 28 d	Result: 92-96% - Readily biodegradable
	Aerobic Biochemical oxygen demand – Exposure time 7 d Result: 92-96% - Readily biodegradable (OECD Test Guideline 301C)	
Bioaccumulation	Low bioaccumulation potential	

Isophoronediamine: (2855-13-2)

Toxicity:		
Toxicity to fish:	semi-static test LC50 – Leuciscus idus (Golden orfe)	110 mg/l – 96 h
Toxicity to daphnia and	Immobilization EC50 – Daphnia magna (Water flea)	55 mg/l – 24 h
Other aquatic Invertebrates	Daphnia magna (Water flea) 230 mg/l – 48 h (OECD Test Guideline 202)	
Toxicity to algae	static test IC50 – Desmodesmus subspicatus (green algae)	700 mg/l – 72 h
Toxicity to bacteria	EC10 – Pseudomonas putida	1,120 mg/l – 18 h
Persistence and degradability		
Biodegradability	Aerobic – Exposure time 28 d	Result: 8% - Not readily biodegradable
Bioaccumulative potential	No data	
Mobility in soil	No data	
Results of PBT and vPvB assessment	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.	

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.	

1,3-Cyclohexanebis(Methylamine: (2579-20-6)
Toxicity:

Toxicity to fish:	semi-static test LC50 – Leuciscus idus (Golden orfe (OECD Test Guideline 203)	130 mg/l – 96 h
Toxicity to daphnia and Other aquatic Invertebrates	static test EC50 – Daphnia magna (Water flea) (OECD Test Guideline 202)	33.1 mg/l – 48 h
Toxicity to algae:	static test EC50 – Pseudokirchneriella subcapitata (Green algae) (OECD Test guideline 201)	56.7 mg/l – 72 h
Toxicity to bacteria:	Growth inhibition EC50 – Sludge Treatment	>1,000 mg/l – 3 h

Persistence and degradability

Biodegradability	Aerobic – exposure time 28 d (OECD Test Guideline 209)	Result: 29% - Not readily biodegradable.
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.	

5-Amino-1,3,3-trimethylcyclohexanemethanamine reaction products with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[ox: (68609-08-5)

Toxicity:

Toxicity to fish:	static test LL50 – Oncorhynchus mykiss (rainbow trout) (OECD Test guideline 203)	70.7 mg/l – 96 h
Toxicity to daphnia and Other aquatic Invertebrates	EL50 – Daphnia magna (Water flea) (OECD Test Guideline 202)	11.1 mg/l – 48 h
Toxicity to algae	static test EL50 – Pseudokirchneriella subcapitata (green algae) Growth inhibition (cell density reduction)	79.4 mg/l – 72 h OECD Test Guideline 201
Toxicity to bacteria	EC50 – Activated sludge - aerobic (OECD Test Guideline 209)	>1,000 mg/l – 3 h

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:	Toxic Liquid, Corrosive, Organic, N.O.S., (Aliphatic Amines, Poly [oxy(methyl-1,2-ethanediyl)],alpha-(2-amino methylethyl)-omega-(2-aminomethylethoxy))
Class:	6.1
UN/ID No.:	UN2927
Packing Group:	II
Labels(s)	6.1 (8)
Marine Pollutant	Yes

**Note: This product contains a substance that is regulated as a Marine Pollutant when transported in bulk packges (liquid – volume exceeding 450 liters, gas – water capacity exceeding 454 kilograms

IMDG Shipping Data:

Proper Shipping Name:	Toxic Liquid, Corrosive, Organic, N.O.S., (Aliphatic Amines, Poly [oxy(methyl-1,2-ethanediyl)],alpha-(2-amino methylethyl)-omega-(2-aminomethylethoxy))
Class:	6.1
UN/ID No.:	UN2927
Packing Group:	II
Labels(s)	6.1 (8)
Marine Pollutant	Yes (Nonylphenol)

**Note: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

IATA Shipping Data:

Proper Shipping Name:	Toxic Liquid, Corrosive, Organic, N.O.S., (Aliphatic Amines, Poly [oxy(methyl-1,2-ethanediyl)],alpha-(2-amino methylethyl)-omega-(2-aminomethylethoxy))
Class:	6.1
UN/ID No.:	UN2927
Packing Group:	II
Labels(s)	6.1 (8)
Marine Pollutant	Yes (Nonylphenol)

**Note: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

TDG

Proper Shipping Name:	Toxic Liquid, Corrosive, Organic, N.O.S., (Aliphatic Amines, Poly [oxy(methyl-1,2-ethanediyl)],alpha-(2-amino methylethyl)-omega-(2-aminomethylethoxy))
Class:	6.1
UN/ID No.:	UN2927
Packing Group:	II
Labels(s)	6.1 (8)
Marine Pollutant	Yes (Nonylphenol)

**Note: This product contains a substance that: 1) is regulated as a Marine Pollutant, or 2) meets the definition of toxic to the aquatic environment.

15. REGULATORY INFORMATION

OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA): This Material Safety Data Sheet (MSDS) has been prepared in compliance with the federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

OSHA Hazard Communication Standard (29CFR1910.1200) hazard class (es) -- Corrosive, Sensitizer.

SARA REPORTING REQUIREMENTS: The components of this product are not subject to the reporting requirements of Sections 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act. Hazard classification: Acute Health Hazard, Fire Hazard.

SARA Threshold Planning Quantity: Not applicable.

TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

CERCLA REPORTABLE QUANTITY (RQ): None

OTHER FEDERAL REGULATIONS: Not applicable.

New Jersey Right-to-know: The following is required composition information:
CAS Number: 2855-13-2
Chemical Name: Isophoronediamine

Pennsylvania Right-to-know: The following is required composition information:
CAS Number: 25154-52-3 100-51-6
Chemical Name: Nonyl Phenol Benezenemethanol
Common Name: Nonylphenol

CALIFORNIA PROPOSITION 65: Not listed.

WHMIS: **D2B-** Poisonous and Infectious Materials/Other Effects

Class D - Poisonous and Infectious Material
Division 2 Materials Causing Other Toxic Effects

E. Corrosive Material

Class E - Corrosive Material

B3 - Flammable and combustible material - Combustible liquid

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.