CROSSFIELD PRODUCTS CORPORATION

www.crossfieldproducts.com

3000 E. Harcourt St.
Rancho Dominguez, CA 90221 (Headquarters)
(310)-886-9100 (8:00 AM – 5:00 PM Pacific Time)

140 Valley Rd.
Roselle Park, NJ 07204
(908)-245-2800 (8:00 AM – 5:00 PM Eastern Time)

SAFETY DATA SHEET

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**MiraFlor MC-5 Membrane/Joint Filler, Part B**
CHEMICAL NAME/CLASS:	Polyamine Solution
PRODUCT USE:	Primer 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:	April 25, 2008
REVISION DATE:	February 12, 2021

2. HAZARD(S) IDENTIFICATION

Signal Word: (Danger)

GHS classification

Acute toxicity – Oral Category 4
Acute toxicity – Dermal Category 4
Skin Corrosion - Category 1B
Serious Eye Damage - Category 1
Skin sensitization - Category 1
Specific target organ toxicity
– repeated exposure – Oral Category 2

Hazard Statements:

H302+H312: Harmful if swallowed or in contact with skin
H314: Causes severe skin burns and eye damage
H317: May cause an allergic skin reaction
H373a: May cause damage to organs through prolonged or repeated exposure if swallowed

Precautionary Statements:

P102: Keep out of reach of children
P103: Read label before use
P260 Do not breathe dust/fume/gas/mist/vapors/spray
P280: Wear protective gloves/protective clothing/eye protection/face protection
P301+P330+P353: 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
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/physician
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.

Hazards not otherwise classified

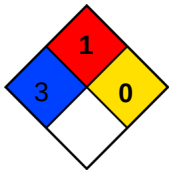
Harmful if swallowed
Corrosive
Components of the product may affect the nervous system
Severe skin irritant
Severe eye irritant
May cause sensitization by skin contact
Harmful in contact with skin

HMIS-RATINGS (SCALE 0 – 4)

HEALTH	3
FLAMMABILITY	1
REACTIVITY	0

Health = 3
Fire = 1
Reactivity = 0

NFPA RATING



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
Methylene Oxide, polymer with benzeneamine, hydrogenated	135108-88-2	40 - 70	NE	NE	NE	NE	NE	NE
benzyl alcohol	100-51-6	15-40	NE	NE	NE	NE	NE	WEEL (TWA) 44.2 (10 ppm)
Aminoethyl piperazine, 1-2-, (AEP)	140-31-8	<15	NE	NE	NE	NE	NE	NE
Methylenebiscyclohexanamine, 4,4'-	1761-71-3	<5	NE	NE	NE	NE	NE	NE
Tris-2.4.6-(dimethylaminomethyl)phenol	90-72-2	<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: Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

Eye contact: Hold eyelids apart, initiate and maintain gently and continuous irrigation until the patient receives medical care. If medical care is no promptly available, continue to irrigate for one hour. Rinse immediately with plenty of water also under the eyelids for at least 20 minutes.

Skin contact: Immediately remove contaminated clothing, and any extraneous chemical, if possible to do so without delay. Initiate and maintain continuous irrigation until the patient receives medical care. If medical care is not promptly available, continue to irrigate for one hour. Cover wound with sterile dressing. Take off contaminated clothing and shoes immediately. NOTE TO PHYSICIANS: Application of corticosteroid cream has been effective in treating skin irritation.

Ingestion:	Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Prevent aspiration of vomit. Turn victim's head to the side.
Inhalation:	Move to fresh air.
Most important Symptoms/effects – acute and delayed	Eye disease. Skin disorders and Allergies. Neurological disorders.

5. FIRE-FIGHTING MEASURES

FLASH POINT, °C (method): >100°C (212°F) Closed Cup
AUTOIGNITION TEMPERATURE, °C: ND
FLAMMABLE LIMITS (in air by volume, %):

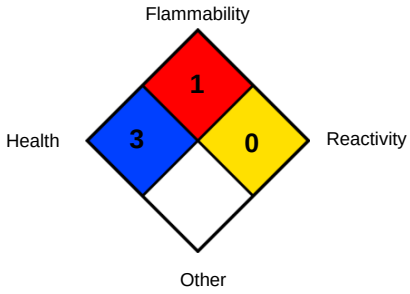
Lower (LEL): NE
Upper (UEL): NE

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: Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated space, preferably outdoors, above ground, and surrounded by dikes to contain spills. 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): 1.03
SOLUBILITY IN WATER: < 0.1 g/l
VAPOR PRESSURE, mm Hg @ 21 °C: ND
ODOR : Amine
LOG WATER/OIL DISTRIBUTION COEFFICIENT: Not available.

EVAPORATION RATE (n-BuAc=1): ND
MELTING/FREEZING POINT: Not established.
BOILING POINT: >200°C (392°F)
pH: Not Established (Alkaline)

APPEARANCE AND COLOR: This product is an amber liquid solution.
HOW TO DETECT THIS SUBSTANCE (warning properties): ND

10. STABILITY and REACTIVITY

STABILITY: Stable under normal conditions.

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 epoxy resins is possible.

CONDITIONS TO AVOID: Avoid exposure or contact to extreme temperatures and incompatible chemicals.

11. TOXICALOGICAL INFORMATION

The Product Itself:

Acute toxicity

Oral	LD50 (Rat): >500 mg/kg
Dermal	No date is available on the product itself
Inhalation	No date is available on the product itself

Repeated dose toxicity

Product: Mixed polycycloaliphatic amines was tested in rats for systemic effects in a subchronic (28 day) oral study at doses ranging from 15 to 300 mg/kg/day. Effects seen a 300 mg/kg/day included decreased survival, decreased body weight gain, increased liver, kidney, and adrenal weights and histological changes in the liver, kidney, adrenals and spleen. The No-Observed-Adverse-Effect-Level (NOAEL) was 15 mg/kg/day. Rats exposed orally to 800 mg/kg benzyl alcohol for thirteen weeks exhibited CNS depression and histopathological changes in the brain, thymus, and skeletal muscles. The No Observed Adverse Effect Level (NOAEL) was 400 mg/kg. No evidence of carcinogenicity was seen in a two-year study with rats and mice. May cause damage to organs through prolonged or repeated exposure if swallowed.

Skin Corrosion/Irritation
Product Severe skin irritation
Serious Eye Damage/Eye irritation
Product Severe eye irritation
Respiratory or Skin Sensitization
Product Dermal sensitization to this product or component has bee seen in some humans.
Carcinogenicity
Product No data available
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogens present or none present in regulated quantities
US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogens present or none present in regulated quantities
US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogens present or none present in regulated quantities
Germ Cell Mutagenicity
In vitro
Product No data available
In vivo
Product No data available
Reproductive toxicity
Product No data is available on the product itself.
Specific Target Organ Toxicity – Single Exposure
Product No data available
Specific Target Organ Toxicity – Repeated Exposure
Product Oral: Kidney May cause damage to organs through prolonged or repeated exposure
No data available
Aspiration Hazard
Product No data available
Other effects: No data available

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

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

4,4'-Methylenebis(cyclohexylamine): (1761-71-3)

Acute Oral Toxicity:	LD50: 380 mg/kg	(Rat-male and female)
Acute Inhalation Toxicity:	No data available	
Acute Dermal Toxicity	LD50: >1,000 mg/kg	(Rabbit-male and female
Skin corrosion/irritation:	Corrosive	(Rabbit 24 hr)
Serious eye damage/eye irritation:	Corrosive	(Rabbit 24 hr)
Respiratory or skin sensitization:	May cause sensitization by skin contact	(guinea pig) Buehler test (OECD Test Guideline 406)
Germ cell mutagenicity:	Negative	Ames Test (S. typhimurium
Mutaghenicity (micronucleus test)	Negative	(mouse-male and female)

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 available
Specific target organ toxicity – single exposure	No data available
Specific target organ toxicity – repeated exposure	Ingestion – may cause damage to organs through prolonged or repeated exposure. Liver, Musculo-skeletal system.
Aspiration hazard:	No data available

Additional Information:

Repeated dose toxicity: Rat-male female – Oral – NOAEL: 15 – 50 mg/kg

RTECS: GX1530000

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

2,4,6-Tris(dimethylaminomethyl)phenol (90-72-2)

Acute Oral Toxicity	LD50: 2,169 mg/kg	(Species – Rat) (OECD Test Guideline 401)
Inhalation:		No data available
Acute Dermal Toxicity		No data availabel
Skin corrosion/irritation:	Skin – Rabbit	Result: Corrosive -4h (OECD Test Guideline 404)
Serious eye damage/eye irritation:		(Species Rabbit): Result – Corrosive
Respiratory or skin sensitization:		Maximization Test – guinea pig Result: The product is a skin sensitizer, sub-category 1B. (OECD Test Guideline 406)
Germ cell mutagenicity:		Ames test S typhinurium Result: Negative
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.

ACGIH: No component of this product present a 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: SN3500000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Cough, Shortness of breath, Headache, Nausea

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

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

Exotoxicity

Fish

Product	No data available	
Copolymer of Formaldehyde and Aniline, hydrogenated	LC50 (Poecilia reticulata [guppy], 96 hr):	63 mg/l

Aquatic Invertebrates

Product	No data available	
Copolymer of Formaldehyde and Aniline, hydrogenated	EC50 (Daphna magna [water flea], 48 hr):	15.4 mg/l

Chronic hazards to the aquatic environment

Fish

Product	No data available	

Aquatic Invertebrates

Product	No data available	

Toxicity to Aquatic Plants

Copolymer of Formaldehyde and Aniline, hydrogenated	ErC50 (Alga, 72 hr)	43.9 mg/l

Persistence and Degradability

Biodegradation

Product	No data available
Copolymer of Formaldehyde and Aniline, hydrogenated	0 % (28 d)

BOD/COD Ratio

Product	No data available

Bioaccumulative potential

Bioconcentration Factor (BCF

Product	No data available

Partition Coefficient n-octanol/water (log Kow)

Product	Log Kow: No data available.

Mobility in soil:

Product	No data available

Other adverse effects: Do not allow to enter soil, waterways or waste water canal.

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

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	

4,4'-Methylenebis(cyclohexylamine): (1761-71-3)

Toxicity to fish:	static test LC50 – Leuciscus idus (golden orfe) – 67.8 mg/l (96 h) (DIN 38412)
Toxicity to daphnia and other Aquatic invertebrates	static test EC50 – Daphnia magna (Water flea) – 9.24 mg/l (48 h)
Toxicity to Algae:	static test EC50 – Desmodesmus subspicatus (green algae) – 140-200 mg/l (72 hr) NOEC – Desmodesmus subspicatus – 7.6 mg/l (OECD Test Guideline 201)
Toxicity to bacteria:	EC50 – Pseudomonas putida – 156 mg/l (30 min)
Persistence and degradability	Biodegradaability aerobic – Exposure time (28 d) result <10% According to the results of tests of this roduct is not readily biodegradable.
Bioaccumulative potential	No data available
Mobility in soil	No data available

2,4,6-Tris(dimethylaminomethyl)phenol (90-72-2)

Toxicity:

Toxicity to fish:	static test LC50 – Cyprinus carpio (carp) – 175 mg/l – 96 h
Toxicity to algae	static test EC50 – Pseudokirchneriella subcapitata (algae) – 84 mg/l – 72 h (OECD Test Guideline 201)

Persistence and degradability

Biodegradability	aerobic – Exposure time 28 d Result: 4% - Not readily biodegradable. (OECD Test Guideline 301D)
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:	III
Marine Pollutant	No

IATA Shipping Data:

Proper Shipping Name:	Paint related material
Class:	8
UN/ID No:	UN3066
Packing Group:	III
Marine Pollutant:	No

IMDG Shipping Data:

Proper Shipping Name:	Paint related material
Class:	8
UN/ID No.:	UN3066
Packing Group:	III
Marine Pollutant:	No

TDG:

Proper Shipping Name:	Paint related material
Class:	8
UN/ID No.:	UN3066
Packing Group:	III
Marine Pollutant:	No

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, Chronic Health 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:	140-31-8
Chemical Name:	n-Aminoethylpiperazine
RTK No.:	75

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

CAS Number:	100-51-6	140-31-8
Chemical Name:	Benzenemethanol	n-Aminoethylpiperazine
Common Name:	Benzyl Alcohol	
Comment:	Hazardous Substance	

CALIFORNIA PROPOSITION 65: Not listed.

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

WHMIS Classification:

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

WHMIS 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 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/m³** 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.