

# CROSSFIELD PRODUCTS CORPORATION

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(908)-245-2800 (8:00 AM – 5: PM Eastern Time)

www.crossfieldproducts.com

## MATERIAL SAFETY DATA SHEET

### **PART I.** *What is the material and what do I need to know in an emergency?*

#### 1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **MiraFlor Glazetop Clear, "A" COMPONENT**

CHEMICAL NAME/CLASS: Amino Functional Resin

PRODUCT USE: Decking Topcoat Resin

SUPPLIER/MANUFACTURER'S NAME: **Crossfield Products Corp.**

ADDRESS (WEST COAST): 3000 E. Harcourt Street (Headquarters)  
Rancho Dominguez, CA 90221

ADDRESS (EAST COAST): 140 Valley Rd.  
Roselle Park, NJ 07204

EMERGENCY PHONE: **CHEMTREC: 800-424-9300**

DATE OF PREPARATION: July 24, 2007

REVISION DATE: April 8, 2011

Si usted no entiende las Hojas de Informacion de Seguridad sobre Materiales, busque a alguien para que se la explique a usted en detalle. (If you do not understand the Material Safety Data Sheet, find someone to explain it to you in detail.)

#### 2. COMPOSITION AND INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	%w/w	EXPOSURE LIMITS IN AIR					
			ACGIH		OSHA			OTHER mg/m <sup>3</sup>
			TLV mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	PEL mg/m <sup>3</sup>	STEL mg/m <sup>3</sup>	IDLH mg/m <sup>3</sup>	
Aspartic Ester	NJTSN (31765300002)- 703IP	40-70	NE	NE	NE	NE	NE	NE
Butanediol Diglycidyl Ester	2425-79-8	7-13	NE	NE	NE	NE	NE	NE
Aliphatic Carboxylic Ester	623-91-6	1-5	NE	NE	NE	NE	NE	NE
Polyamidoamine	68082-29-1	10-30	NE	ND	NE	ND	ND	
1-Methoxy-2-Propanol Acetate	108-65-6	10-30	NE	NE	NE	NE	NE	MAK: 50 ppm; 275 mg/m <sup>3</sup> (1996)
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 = 169 g/L			As Applied (Part of multi-component system) = 95 g/L					

NE = Not Established. ND = No Data NA = Not Applicable 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.

### 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** This product is a pale yellow liquid solution with slightly ester odor. This solution is corrosive, and can be irritating to contaminated tissue. Harmful if inhaled. Ingestion of large quantities can be fatal. In the event of fire or spill, adequate precautions must be taken. If involved in a fire, this product may decompose to produce toxic or irritating combustion products and a variety of other compounds (i.e. carbon monoxide, carbon dioxide and oxides of nitrogen). Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** This solution can damage skin, eyes, mucous membranes, and other contaminated tissue.

**INHALATION:** Vapors, mists and sprays may cause damage to contacted tissue and produce scarring. Repeated or prolonged exposures can cause tightness of chest, shortness of breath and cough.

**CONTACT WITH SKIN:** Undiluted product quickly causes irritation. May cause chemical burns. May cause allergic reaction and sensitization, defatting of skin, rash and irritation.

**CONTACT WITH EYES:** Severe irritant. May cause burns. Vapors may cause lacrimation and reversible corneal edema. Repeated exposure can cause conjunctivitis or corneal damage.

**SKIN ABSORPTION:** Skin absorption is not anticipated to be a significant route of over-exposure to any component of this product.




**INGESTION:** May cause irritation and bleeding of the gastrointestinal tract. Scarring of the affected tissues may occur.

**INJECTION:** Though injection is not anticipated to be a significant route of over-exposure to this product, if it occurs, may cause local reddening, tissue swelling, and discomfort.

#### **HEALTH EFFECTS OR RISKS FROM EXPOSURE: A Brief Explanation in Lay Terms.**

**ACUTE:** This solution is corrosive, and can irritate and damage eyes, skin, mucous membranes, and any other exposed tissue. If inhaled, irritation of the respiratory system may occur, with coughing, and breathing difficulty. Though unlikely to occur during occupational use, ingestion of large quantities may be fatal.

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

WHMIS HAZARDOUS MATERIAL SYSTEM INFORMATION			
HEALTH	(BLUE)	2	
FLAMMABILITY	(RED)	2	
REACTIVITY	(YELLOW)	0	
PROTECTIVE			D
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		
For routine industrial applications			

## PART II *What should I do if a hazardous situation occurs?*

### 4. FIRST- AID MEASURES

**SKIN EXPOSURE:** If the product contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 15 minutes. Remove contaminated clothing, taking care not to contaminate eyes. Victim of major skin contact should remain under medical observation for 24 hours. Victim must seek medical attention.

**EYE EXPOSURE:** If this product enters the eyes, open victim's eyes while under gentle running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Oils or ointments should not be used at this time. Victim must seek immediate medical attention.

**INHALATION:** If vapors, mists, or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

**INGESTION:** If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, do not induce vomiting. Victim should drink 1 – 2 glasses of water or milk. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow.

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with victim.

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## 5. FIRE- FIGHTING MEASURES

FLASH POINT, °C (method): >45 °C (114 °F)

AUTOIGNITION TEMPERATURE, °C: ND

FLAMMABLE LIMITS (in air by volume, %, butyl acetate): Lower (LEL): 1.30%

Upper (UEL): 13.1%

FIRE EXTINGUISHING MATERIALS: (OSHA Class II)

Water Spray: YES

Foam: YES

Halon: YES

Carbon Dioxide: YES

Dry Chemical: YES

Other: Any "ABC" Class.

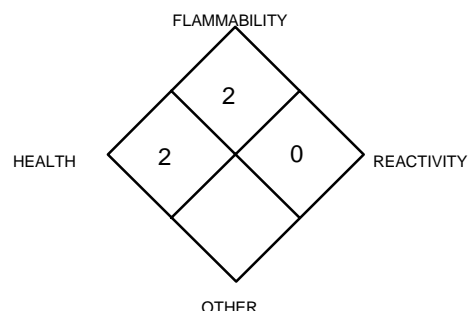
UNUSUAL FIRE AND EXPLOSION HAZARDS: May generate toxic or irritating combustion products, sudden reactions and fire may result if product is mixed with oxidizing agent.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.

### NFPA RATING



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## 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 inert material (e.g., dry sand or earth), polypads or other suitable absorbent materials. Shut off sources of ignition immediately. Decontaminate the area thoroughly. Place all spill residue in metal containers for recovery or disposal. Dispose of in accordance with Federal, State, and local hazardous waste disposal regulations (see Section 13, Disposal Considerations). Prevent entry into sewers, storm drains and waterways.

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## PART III *How can I prevent hazardous situations from occurring?*

### 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: Keep away from oxidizers. Store in well-ventilated areas. Keep cool, dry and in closed containers.

**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. Begin by a triple-rinse with water followed, if necessary, with an additional rinse. Collect all rinsates and dispose of according to applicable Federal, State, or local procedures.

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## 8. EXPOSURE CONTROLS - 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:** 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 or nitrile rubber gloves for spill response, as stated in Section 6 of this MSDS (Accidental Release Measures).

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

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## 9. PHYSICAL and CHEMICAL PROPERTIES

**RELATIVE VAPOR DENSITY (air = 1):** ND

**SPECIFIC GRAVITY (water = 1):** 1.03

**SOLUBILITY IN WATER:** <1%

**VAPOR PRESSURE, mm Hg:** ND

**ODOR THRESHOLD:** NE

**LOG WATER/OIL DISTRIBUTION COEFFICIENT:** ND

**EVAPORATION RATE (n-BuAc=1):** ND

**MELTING/FREEZING POINT:** <-18 °C (0 °F)

**BOILING POINT:** ND

**pH:** ND

**APPEARANCE AND COLOR:** This is pale yellow liquid with a slightly ester odor.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** Not established.

## 10. STABILITY and REACTIVITY

STABILITY: Stable.

DECOMPOSITION PRODUCTS: Fire will produce carbon monoxide, carbon dioxide, oxides of nitrogen, amines and other aliphatic components which have not been determined.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: This product may react with oxidizers and isocyanates.

HAZARDOUS POLYMERIZATION: Will not occur.

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

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## **PART IV** *Is there any other useful information about this material?*

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### 11. TOXICOLOGICAL INFORMATION

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

There is currently no toxicology data available for the component of the product.

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

IRRITANCY OF PRODUCT: This product is severely irritating to contaminated tissue.

SENSITIZATION TO THE PRODUCT: This product is reported to be a pulmonary and skin sensitizer.

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

Mutagenicity: This product is not reported to produce mutagenic effects in humans.

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

Teratogenicity: This product is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: This product is not reported to cause reproductive effects in humans.

*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.*

BIOLOGICAL EXPOSURE INDICES: Currently there are no Biological Exposure Indices (BEIs) associated with the components of this product.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE Asthma, bronchitis, emphysema, eye disease, skin disorders and allergies.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate over-exposure to this product.

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### 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: The components of this product are relatively stable in the environment; they may degrade, after time, into other organic and inorganic constituents.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: This product is harmful to plant and animal life if this product is released into the environment. As with all chemicals, work practices should be aimed at eliminating environmental releases.

EFFECT OF CHEMICAL ON AQUATIC LIFE This product can substantially alter the pH of an aquatic environment and can be toxic to fish and aquatic plants. As with all chemicals, work practices should be aimed at eliminating environmental releases.

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### 13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Incineration is a preferred method. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: NA

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### 14. TRANSPORTATION INFORMATION

DOT:

Proper Shipping Name: Combustible Liquid N.O.S. (contains Propylene Glycol Monomethyl Ether Acetate)  
UN Number: NA1993  
Class: 3  
Packing Group: III

**DOT Note:** For quantities less than 110 gallons per container, this product ships as 'Not Regulated'.  
(For Federal Express and UPS shipments, use the IATA / IMDG information.)

IATA / IMDG:

Proper Shipping Name: Resin Solution  
UN Number: 1866  
Class: 3  
Packing Group: III

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000): 153

MARINE POLLUTANT: This product does not contain any components which are designated by the Department of Transportation to be Marine Pollutants. (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS. Use the above information for the preparation of Canadian Shipments.

PASSENGER AIR MAX. QUANTITY: 60L

PASSENGER PACKING INSTRUCTIONS: 309

CARGO AIR – MAX. QUANTITY: 220L

CARGO AIR – PACKING INSTRUCTION: 310

Note: The latest DOT information is provided, please verify all DOT information as it subject to change without notice.

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### 15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: The components of this product subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act are as follows.

COMPONENT	SARA 302	SARA 304	SARA 313
Aspartic Ester	No	No	No

SARA Threshold Planning Quantity: Not applicable.

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

DOT REGULATED COMPONENT (RQ): Not regulated.

CERCLA REPORTABLE QUANTITY (RQ): Not regulated.

OTHER FEDERAL REGULATIONS: Not applicable.

STATE REGULATORY INFORMATION: Components of this product are covered under specific State regulations, as denoted below:

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

<u>Weight %</u>	<u>Components</u>	<u>CAS No.</u>
10 - 30 %	Propylene Glycol Monomethyl Ether Acetate	108-65-6

CALIFORNIA PROPOSITION 65: The components of this product are not known to the state of California to cause cancer, birth defects or other reproductive harm.

LABELING (Precautionary Statements): **DANGER!** CORROSIVE MATERIAL! LIQUID AND VAPORS CAUSE SEVERE IRRITATION TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. MAY CAUSE LUNG DAMAGE. AVOID SPATTERING BY SLOWLY ADDING TO SOLUTION. Do not get into eyes, on skin or clothing. Avoid breathing spray or mist. Do not take internally. Use with adequate ventilation and employ respiratory protection when exposed to the mist or spray. When handling, wear chemical splash goggles, face shield, rubber gloves and protective clothing. Do not transfer to unlabeled containers. Use with adequate ventilation. Wash thoroughly after handling, Keep container closed when not in use. FIRST-AID: In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not induce vomiting. IN CASE OF FIRE: Use water, dry chemical, CO<sub>2</sub>, or alcohol foam. IN CASE OF SPILL: Dike area to contain spill. Only trained personnel equipped full acid- protective gear should be permitted in this area. Spilled material may be absorbed into an appropriate absorbent material. Spills should be removed using a vacuum truck. Do not wash into storm or sanitary sewer system.

TARGET ORGANS: Skin, eyes and respiratory system.

WHMIS:

**WHMIS Classification:** 108-65-6 1-Methoxy-2-Propanol Acetate  
B3 - Flammable and combustible material - Combustible liquid



B3 - Combustible Liquid

**WHMIS Health Effects Criteria Met by this Chemical:**  
Does not meet criteria.

**WHMIS Ingredient Disclosure List:**  
Not included.

EU Information:

<b>Name:</b>	Oxirane, 2,2'-[1,4-butanediylbis(oxymethylene)]bis-		
<b>Synonym or Group Name:</b>	1,4-bis(2,3 epoxypropoxy)butane; butanedioldiglycidyl ether		
<b>CAS No:</b>	2425-79-8	<b>EEC No:</b>	2193717
<b>Code No:</b>		<b>Annex I Index No:</b>	603-072-00-7
<b>Aquatic Classification:</b>	N.C.	<b>Based On:</b>	Lack of data
<b>Ozone Classification:</b>			
<b>Water Solubility:</b>	<b>Acute Toxicity:</b>	<b>Readily degradable:</b>	<b>Log Pow:</b> <b>BCF:</b>
<b>Annex I Classification:</b>	Xn; R20/21 Xi; R36/38 R43	<b>N/TPC:</b> <input type="checkbox"/>	<b>ATP:</b> 12
<b>Summary records:</b>	10-12 September 1997 Meeting on environmental effects		
<b>Comments:</b>			

<b>Name:</b>	2-Propanol, 1-methoxy-, acetate		
<b>Synonym or Group Name:</b>	2-methoxy-1-methylethyl acetate		
<b>CAS No:</b>	108-65-6	<b>EEC No:</b>	2036039
<b>Code No:</b>		<b>Annex I Index No:</b>	607-195-00-7
<b>Aquatic Classification:</b>	N.C.	<b>Based On:</b>	Data
<b>Ozone Classification:</b>			
<b>Water Solubility:</b>	<b>Acute Toxicity:</b>	<b>Readily degradable:</b> Yes	<b>Log Pow:</b> 0,43
<b>BCF:</b>			
<b>Annex I Classification:</b>	R10 Xi; R36	<b>N/TPC:</b> <input type="checkbox"/>	<b>ATP:</b> 19
<b>Summary records:</b>	17-19 September 1996 Meeting on environmental effects		
<b>Comments:</b>	ECBI/07/96-Add.5, ECBI/07/96-Add.8 (Data on algae missing)		



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## 16. OTHER INFORMATION

### PREPARED BY:

BILL BEACH  
CROSSFIELD PRODUCTS CORP.

THIS INFORMATION IS DRAWN FROM RECOGNIZED SOURCES BELIEVED TO BE RELIABLE. CROSSFIELD PRODUCTS 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.
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## 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. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

### FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the **National Fire Protection Association (NFPA)**. **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<sub>50</sub>** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC<sub>50</sub>** - 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<sup>3</sup>** 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.