J-M Manufacturing Co., Inc. **Internal Correspondence**

To : Ernie Pronske Date: January 21, 1986

From : E. E. Wang

Copies : Wilfred Wang, C.J. Chen, All Plant Managers

Subject : J-M's Material Safety Data Sheets

To comply with the OSHA Hazard Communication Standard, I have revised our MSDS's. Enclosed please find five different MSDS's to be duplicated and distributed to our customers through J-M sales representatives. (Please duplicate copies as many as you need.)

Copies of those revised MSDS's should be provided to our customers/distributors with the next shipment of our products. This is required by law even when the customers/distributors have not requested our MSDS's.

E. E. Wang

EEW:rac

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SC-JMM-3090 SC-SEC-0835

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1367

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
Griqualand Exploration and Finance Corp.	(27-11) 39-5458
ADDRESS (Number, Street, City, State, and ZIP Code): P. O. Box 69, Kuruman, Cape Province, Rep. of South Africa	
CHEMICAL NAME AND SYNONYMS: Crocidolite Asbestos	TRADE NAME AND SYNONYMS: Asbestos
CHEMICAL FAMILY: Fiberous Mineral Silicate	FORMULA: $Na_2Fe_5(OH)Si_4O_{11})_2$

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS		N/A	BASE METAL		N/A
CATALYST		N/A	ALLOYS		N/A
VEHICLE		N/A	METALLIC COATINGS		N/A
SOLVENTS		N/A	FILLER METAL PLUS COATING OR CORE FLUX		N/A
ADDITIVES		N/A	OTHERS		N/A
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Crocidolite Asbestos Fiber Approx. 100 %		*
(*For TLV - See Section V)		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	3.2-3.3
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	None		
APPEARANCE AND ODOR	Blue fiberous dry material - no odor.		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
N/A	N/A		

EXTINGUISHING MEDIA
Material is non-flammable. No fire or explosion hazard.

SPECIAL FIRE FIGHTING PROCEDURES
See Above.

UNUSUAL FIRE AND EXPLOSION HAZARDS
See Above.

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE OSHA Exposure Limits Effective 7/1/76. The 8 hr. time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall

EFFECTS OF OVEREXPOSURE not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air. Ceiling Concentrations. No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air. (Refer to OSHA Stand. for Exposure to Asbestos

EMERGENCY AND FIRST AID PROCEDURES Dust, Fed. Register, Vol. 37, No. 110 June 7, 1972, Para. (h)(2).

Avoid breathing excessive dust when handling, dumping and mixing. See Caution Label on bag. Breathing asbestos dust may cause serious bodily harm.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)* N/A

HAZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Vacuum spillage. Repair broken bags. If sweeping is necessary, wet down spillage.

Use approved respiratory equipment when required.

WASTE DISPOSAL METHOD
Disposal of waste in accordance with OSHA Standard for Exposure to Asbestos Dust, Federal Register, Volume 37, No. 110 - Wednesday, June 7, 1972, paragraph (h)(2).

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)* Use respirators as recommended by the OSHA Standard for Exposure to Asbestos Dust, Federal Register, Vol. 37, No. 110 - 6/7/72 Para. (d)

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL *(General)* Control with mechanical dust collection equipment to within TLV. (See Amer. Nat'l Std. Institute Booklet, Z9.2-1971).	

PROTECTIVE GLOVES	EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT Use special clothing as required by OSHA Standard for Exposure to Asbestos Dust, Fed. Register, Vol. 37, No. 110 - 6/7/72, paragraph (d)

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Maintain good housekeeping practices. Vacuum clean waste and place in closed containers.

OTHER PRECAUTIONS
SEE CAUTION LABEL ON BAG.

While the information and recommendations set forth herein are believed to be accurate as of the date hereof, GRIQUALAND EXPLORATION AND FINANCE CORP. MAKES NO WARRANTY WITH RESPECT THERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

Form OSHA-20
Rev. May 72

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MINED BY: Cape Asbestos South Africa (Pty) Limited SOLD BY: Associated Mineral Corp. A. G.	EMERGENCY TELEPHONE NO. (312) 726-8515
ADDRESS (Number, Street, City, State, and ZIP Code) c/o Continental Products Corp., 150 N. Wacker Dr., Chgo, Ill. 60606	
CHEMICAL NAME AND SYNONYMS CROCIDOLITE ASBESTOS	TRADE NAME AND SYNONYMS N/A
CHEMICAL FAMILY AMPHIBOLE	FORMULA $NA_2(FeMg)_5Si_8O_{22}(OH)_2$

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	3.3-3.4
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	Negligible		
APPEARANCE AND ODOR	Blue fibre - no odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES: N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS: Material totally non inflammable and non explosive.			

(Continued on reverse side)

IK-1700

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	ACGIH -2mppcf
EFFECTS OF OVEREXPOSURE	Only long term effects
EMERGENCY AND FIRST AID PROCEDURES	N/A

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N/A
INCOMPATABILITY *(Materials to avoid)*			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	Rebag in impermeable bags
WASTE DISPOSAL METHOD	Dusty waste to be disposed of in sealed impermeable containers.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*	Type specified for asbestos dust by U.S. Bureau of Mines.		
VENTILATION	LOCAL EXHAUST	Where practicable	SPECIAL
	MECHANICAL *(General)*		OTHER
PROTECTIVE GLOVES		EYE PROTECTION	
OTHER PROTECTIVE EQUIPMENT	Overalls and headgear		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Store in impermeable bags or containers which do not permit the escape of dust.
OTHER PRECAUTIONS	

MATERIAL SAFETY DATA SHEET

PREPARED BY: Dr. E.E. Wang

DATE: 1-30-87

SECTION I

Manufacturer's Name, Address, and Phone Number

J-M A/C PIPE CORPORATION

1051 Sperry Road, Stockton, CA 95206

(209) 982-1500

Product Trade Name and Synonyms

TRANSITE Pipe

Chemical Name and Synonyms

Asbestos-Cement Pipe

Chemical Family	Formula
Mineral	N/A

SECTION II: INGREDIENTS

Substance	CAS #	WT. %
Asbestos (Chrysotile)	12001-29-5	11
Asbestos (Crocidolite)	1332-21-4	4
Silica (Crystalline)	14808-60-7	35
Portland Cement	None	50

SECTION III: OCCUPATIONAL EXPOSURE LIMITS

Substance	OSHA's PEL	ACGIH's TLV	Listed as Carcinogen
Asbestos (Chrysotile)	0.2 f/cc	2f/cc	Yes
Asbestos (Crocidolite)	0.2f/cc	0.2f/cc	Yes
Silica (Crystalline)	(10* or 30** mg/M3) / (%SiO2+2)	Same as PEL	No
Portland Cement	50 mppcf	5* or 10**mg/M3	No
*As respirable dust; **As total dust			
*** Asbestos fibers measured are those longer than 5 micrometers.			
Note: PEL and TLV refer to 8-hr time weighted average			

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SECTION IV: PHYSICAL DATA

Boiling Point (°F)	N/A	Specific Gravity (H_2O=1)	1.85
Vapor Pressure (mm Hg)	N/A	Percent, Volatile by Volume (%)	N/A
Vapor Density (Air = 1)	N/A	Evaporation Rate (=1)	N/A
Solubility in Water	N/A		

Appearance and Odor: Grayish-white pipe; odorless

SECTION V: FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	N/A	Flammable Limits	Lel: N/A; Uel: N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: None

SECTION VI: REACTIVITY DATA

Stability		Conditions to Avoid
Stable	Unstable	Power driven saws with abrasive discs should NOT be used for dry cutting or beveling asbestos-cement pipe. Always avoid breathing dust.
X		

Incompatability (Materials to Avoid): None

Hazardous Decomposition Products: None

Hazardous Polymerization		May Occur		Will Not Occur	X

Conditions to Avoid: N/A

SECTION VII: HEALTH HAZARD DATA (See also Section XI)

Effects of Overexposure

Inhalation of excessive crystalline silica may cause silicosis. Overexposure to airborne asbestos fibers may cause pulmonary diseases (asbestosis, mesothelioma, pleural plaques, and lung cancer). Smoking greatly increases cancer risk from asbestos exposure. The descriptions and symptoms of the above mentioned diseases are given in Section XI.

Emergency and First Aid Procedures

Inhalation: Move person to fresh air.

Eyes: Wash with water for 15 minutes.

Skin: Clean area of contact.

Ingestion: Seek medical attention if necessary.

SECTION VIII: SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled

Pipe fragments and installation debris must be handled in a manner which avoids airborne dispersion of asbestos dust. Use wet or vacuum method for clean-up.

Waste Disposal Method

Comply with all applicable local, state, and federal regulations.

SECTION IX: SPECIAL PROTECTION INFORMATION

Respiratory Protection Not required when recommended work practices are followed.

Ventilation		
	Local Exhaust N/A	Special N/A
	Mechanical N/A	Other N/A

Protective Gloves Not required

Eye Protection Not required

Other Protective Equipment Not required when recommended work practices are followed.

SECTION X: SPECIAL PRECAUTIONS (See also Section XII)

Precautions to be Taken in Handling and Storing

Follow "Recommended Work Practices for A/C Pipe" published by A/C Pipe Producers Association.

Other Precautions All tools which may release asbestos fibers in excess of the exposure limits shall be provided with local exhaust ventilation systems.

REMARKS This information is given without warranty, representation, inducement or license of any kind, except that it is accurate to the best of our knowledge or obtained from sources believed by us to be accurate, and we do not assume any legal responsibility for use or reliance upon same.

A/C PIPE

SECTION XI

HEALTH HAZARDS - DESCRIPTIONS AND SYMPTOMS

SILICOSIS

A disease due to breathing air containing crystalline silica, characterized anatomically by generalized fibrotic changes and the development of miliary nodulations in both lungs.

The symptoms include gradually increasing difficulty in breathing and non-productive cough, shortness of breath, decreased chest expansion, lessened capacity for work, absence of fever, and increased susceptibility to tuberculosis.

ASBESTOSIS

This is a chronic lung disease in which the lungs become scarred as a result of the biological reaction to inhaled asbestos. Damage to the lungs is irreversible and progressively disabling.

Affected individuals experience shortness of breath on exertion. Examining physicians may note a bluish color of the lips and tongue, an alteration in the nails, and hear crackles at the base of the lungs. The chest x-ray is found to have an increase in the profusion of small irregular opacities and deterioration may be noted in tests of lung function.

Although asbestosis does not necessarily lead to lung cancer, individuals with this disease are at high risk to develop cancer.

Mesothelioma

This is a malignant tumor of the thin membranes lining the chest and abdominal cavities. It is an extremely rare cancer in the general population and is almost invariably associated with asbestos exposure. It is a rapidly progressive disease leading to death within a year or two of appearance.

The first symptom may be shortness of breath or pain in the wall of the chest aggravated by deep breathing or abdominal pain varying from vague discomfort to severe spasms.

Pleural Plaques

The pleura are the membranes lining the chest cavity. Asbestos fibers reaching this cavity may produce scarring of these membranes. This is visible in the chest x-ray as a pleural thickening. If calcium salts become deposited in these areas, then pleural plaques are produced. Pleural thickening is a common complication of pulmonary asbestosis and these x-ray signs are often used as markers of asbestos exposure.

Lung Cancer

The symptoms include a cough, or a change in the cough habit, chest pain, and occasionally blood-streaked sputum coughed up from the lungs.

The asbestos-related lung cancer occurs more frequently in the lower lobes. Initial diagnosis is by chest x-ray.

SECTION XII

PRECAUTIONS FOR HANDLING ASBESTOS-CONTAINING PIPES

(Hygienic Practices)

In case of cutting or beveling asbestos-cement pipes, all hand or power-operated tools which may produce or release asbestos fibers should be provided with local exhaust ventilation systems.

Asbestos-containing material should be handled in a wet state sufficient to prevent the emission of airborne fibers.

Workers engaged in the demolition of asbestos-containing pipes should be provided with appropriate respiratory equipment approved by the Bureau of Mines or the National Institute for Occupational Safety and Health and special clothing such as coveralls or similar whole body clothing.

Asbestos-containing waste should be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

MATERIAL SAFETY DATA SHEET

PREPARED BY: Dr. E.E. Wang

DATE: 1-30-87

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Chemical Name and Synonyms

Asbestos-Cement Pipe

Chemical Family	Formula
Mineral	N/A

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Substance	CAS #	WT. %
Asbestos (Chrysotile)	12001-29-5	11
Asbestos (Crocidolite)	1332-21-4	4
Silica (Crystalline)	14808-60-7	35
Portland Cement	None	50

SECTION III: OCCUPATIONAL EXPOSURE LIMITS

Substance	OSHA's PEL	ACGIE's TLV	Listed as Carcinogen
Asbestos (Chrysotile)	0.2 f/cc	2f/cc	Yes
Asbestos (Crocidolite)	0.2f/cc	0.2f/cc	Yes
Silica (Crystalline) (10* or 30** mg/M3) / (%SiO_2+2)	Same as PEL		No
Portland Cement	50 mppcf	5* or 10**mg/M3	No

*As respirable dust; **As total dust

*** Asbestos fibers measured are those longer than 5 micrometers.

Note: PEL and TLV refer to 8-hr time weighted average

B-3, 4

SECTION IV: PHYSICAL DATA

Boiling Point (°F)	N/A	Specific Gravity (H_2O=1)	1.85
Vapor Pressure (mm Hg)	N/A	Percent, Volatile by Volume (%)	N/A
Vapor Density (Air = 1)	N/A	Evaporation Rate (=1)	N/A
Solubility in Water	N/A		

Appearance and Odor: Grayish-white pipe; odorless

SECTION V: FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	N/A	Flammable Limits	Lel: N/A; Uel: N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: None

SECTION VI: REACTIVITY DATA

Stability		Conditions to Avoid
Stable	Unstable	Power driven saws with abrasive discs should NOT be used for dry cutting or beveling asbestos-cement pipe. Always avoid creating and breathing dust.
X		

Incompatability (Materials to Avoid): None

Hazardous Decomposition Products: None

Hazardous Polymerization	May Occur		Will Not Occur	X

Conditions to Avoid: N/A

SECTION VII: HEALTH HAZARD DATA (See also Section XI)

Effects of Overexposure

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Emergency and First Aid Procedures

Inhalation: Move person to fresh air.

Eyes: Wash with water for 15 minutes.

Skin: Clean area of contact.

Ingestion: Seek medical attention if necessary.

SECTION VIII: SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled

Pipe fragments and installation debris must be handled in a manner which avoids airborne dispersion of asbestos dust. Use wet or vacuum method for clean-up.

Waste Disposal Method

Comply with all applicable local, state, and federal regulations.

SECTION IX: SPECIAL PROTECTION INFORMATION

Respiratory Protection Not required when recommended work practices are followed.

Ventilation	Local Exhaust	N/A	Special	N/A
	Mechanical	N/A	Other	N/A

Protective Gloves	Not required	**Eye Protection**	Not required

Other Protective Equipment Not required when recommended work practices are followed.

SECTION X: SPECIAL PRECAUTIONS (See also Section XII)

Precautions to be Taken in Handling and Storing

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Other Precautions All tools which may release asbestos fibers in excess of the exposure limits shall be provided with local exhaust ventilation systems.

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A/C PIPE

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SECTION XII

PRECAUTIONS FOR HANDLING ASBESTOS-CONTAINING PIPES

(Hygienic Practices)

In case of cutting or beveling asbestos-cement pipes, all hand or power-operated tools which may produce or release asbestos fibers should be provided with local exhaust ventilation systems.

Asbestos-containing material should be handled in a wet state sufficient to prevent the emission of airborne fibers.

Workers engaged in the demolition of asbestos-containing pipes should be provided with appropriate respiratory equipment approved by the Bureau of Mines or the National Institute for Occupational Safety and Health and special clothing such as coveralls or similar whole body clothing.

Asbestos-containing waste should be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

J-M Manufacturing Co., Inc. — Internal Correspondence

To : Ernie Pronske

Date: January 21, 1986

From : E. E. Wang

Copies : Wilfred Wang, C.J. Chen, All Plant Managers

Subject : J-M's Material Safety Data Sheets

To comply with the OSHA Hazard Communication Standard, I have revised our MSDS's. Enclosed please find five different MSDS's to be duplicated and distributed to our customers through J-M sales representatives. (Please duplicate copies as many as-you need.)

Copies of those revised MSDS's should be provided to our customers/distributors with the next shipment of our products. This is required by law even when the customers/distributors have not requested our MSDS's.

E. E. Wang

EEW:rac

PLAINTIFF EXHIBIT

JMM 5579

JAN. 21 1988

Reichert 29
EXHIBIT NO.
7-8-11
Rhonda S. Hanson, CSR

DAWES002475

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1307

MATERIAL SAFETY DATA SHEET

Prepared By:
Dr. E.E. Wang

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

Rev. 1-16-86

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
J-M Manufacturing Company, Inc.	(209) 982-1500
ADDRESS (Number, Street, City, State, and ZIP Code): 1051 Sperry Road, Stockton, CA 95206	
CHEMICAL NAME AND SYNONYMS: Polyvinyl Chloride [CAS #: 9002-86-2]	TRADE NAME AND SYNONYMS: PVC Plastic Pipes
CHEMICAL FAMILY: Polymer	FORMULA: $-(CH_2CHCl)_n-$

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS		%	TLV (Units)	ALLOYS AND METALLIC COATINGS		%	TLV (Units)
PIGMENTS	N/A			BASE METAL	N/A		
CATALYST	N/A			ALLOYS	N/A		
VEHICLE	N/A			METALLIC COATINGS	N/A		
SOLVENTS	N/A			FILLER METAL PLUS COATING OR CORE FLUX	N/A		
ADDITIVES	N/A			OTHERS	N/A		
OTHERS	N/A						

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV* (Units)
PVC[CAS #:9002-86-2], A Nuisance Dust	Major	15mg/m^3
May Or May Not Contain Trace Amount Of Vinyl Chloride Monomer (VCM)		1 ppm
[CAS #:75-01-4], A Carcinogen Determined By IARC And OSHA.		
* TLVs Refer To Airborne Concentrations Over 8-Hr TWA.		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	1.4
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Pipes Are In Green, Blue, Or Gray Color; Odorless;		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
734°F; Self-Ignition: 850°F (ASTM D-1929)	N/A		

EXTINGUISHING MEDIA: Water, Carbon Dioxide, Or Dry Chemical (ABC Only)

SPECIAL FIRE FIGHTING PROCEDURES: Wear Gas Mask Approved For Acid Vapors.

UNUSUAL FIRE AND EXPLOSION HAZARDS: PVC Does Not Support Combustion. An External Fire Causes It To Burn And Hydrogen Chloride Gas Is Liberated.

(Continued on reverse side)

PVC

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Shown On First Page; No Acute Health Effects Associated With Inhalation Of PVC Dust

EFFECTS OF OVEREXPOSURE
Prolonged Breathing Of Concentrated PVC Dust May Cause Losses In Lung Function. PVC Dust May Also Cause Eye Irritation And Skin Dryness.

EMERGENCY AND FIRST AID PROCEDURES
No Emergency Situation Is Likely To Arise From The Routine Handling Of PVC Pipes. However, Should It Happen: Eyes- Remove Particles By Flushing With Clean Water. Skin- Wash With Soap & Water. Ingestion- Do NOT Induce Vomiting, Consult Physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Do Not Heat To Temperatures Greater Than 350°F Which Causes Slow Darkening & Decomposition.
	STABLE	X	Higher Heat (≥482°F) Increases Rate & Evolution Of HCl Gas (An Acidic & Corrosive Gas).

INCOMPATABILITY *(Materials to avoid)*
Fluorine, Acetal, Amine-Containing Materials, Certain Ketones & Organic Solvents.

HAZARDOUS DECOMPOSITION PRODUCTS
Thermal Decomposition Produces HCl, CO, And CO_2 (Above 570°F)

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Pipe Fragments And Debris Should Be Swept Up And Removed To Disposal Container.

WASTE DISPOSAL METHOD

Handle In Accordance With Federal, State, And Local Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Not Required Under Normal Conditions.

VENTILATION		
	LOCAL EXHAUST: N/A	SPECIAL: N/A
	MECHANICAL *(General)*: N/A	OTHER: N/A

PROTECTIVE GLOVES	EYE PROTECTION
Not Ordinarily Required	Not Ordinarily Required

OTHER PROTECTIVE EQUIPMENT
Not Required For Ordinary Handling.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Avoid Storing In A Place With Temperatures Higher Than 350°F. Avoid Creating & Breathing PVC Dust.

OTHER PRECAUTIONS
All Tools Which May Create PVC Dust In Excess Of The Exposure Limits Shall Be Provided With Local Exhaust Ventilation Systems.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Prepared By:
Dr. E.E. Wang

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

Rev. 1-16-86

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
J-M A/C Pipe Corporation	(209) 982-1500
ADDRESS (Number, Street, City, State, and ZIP Code): 1051 Sperry Road, Stockton, CA 95206	
CHEMICAL NAME AND SYNONYMS: Asbestos-Cement Pipe	TRADE NAME AND SYNONYMS: TRANSITE Pipe
CHEMICAL FAMILY: Mineral	FORMULA: N/A

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST N/A			ALLOYS N/A		
VEHICLE N/A			METALLIC COATINGS N/A		
SOLVENTS N/A			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES N/A			OTHERS N/A		
OTHERS N/A					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV* (Units)
Asbestos [CAS #: 1332-21-4], A Carcinogen Determined By IARC	15	2f/cc
Silica [CAS #: 7631-86-9]	35	5mg/m^3
Portland Cement	50	15mg/m^3
* TLVs Refer To Airborne Concentrations Over 8-Hr TWA.		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	1.85
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	N/A		
APPEARANCE AND ODOR	Grayish-White Pipe; Odorless;		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
N/A	N/A		

EXTINGUISHING MEDIA: N/A

SPECIAL FIRE FIGHTING PROCEDURES: N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

(Continued on reverse side)

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DAWES002478

A/C Pipe

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Shown On First Page; Inhalation Of Excessive Silica May Cause Silicosis.

EFFECTS OF OVEREXPOSURE
Over-Exposure To Excessive Concentrations Of Airborne Asbestos Fibers May Cause Pulmonary Disease. Smoking Greatly Increases Risk From Asbestos Exposure.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation: Move Person To Fresh Air. Eyes: Wash With Water For 15 Minutes. Skin: Clean Area Of Contact. Ingestion: Seek Medical Attention If Necessary.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Power Driven Saws With Abrasive Discs Should NOT Be Used For Dry Cutting Or Beveling Asbestos-Cement Pipe. Always Avoid Creating And Breathing Dust.
	STABLE		

INCOMPATABILITY *(Materials to avoid)*
None

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Pipe Fragments And Installation Debris Must Be Handled In A Manner Which Avoids Airborne Dispersion Of Asbestos Dust. Use Wet Or Vacuum Method For Clean-Up.

WASTE DISPOSAL METHOD
Comply With All Applicable Local, State, And Federal Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Not Required When Recommended Work Practices Are Followed.

VENTILATION		
LOCAL EXHAUST: N/A	SPECIAL: N/A	
MECHANICAL *(General)*: N/A	OTHER: N/A	

PROTECTIVE GLOVES	EYE PROTECTION
Not Required	Not Required

OTHER PROTECTIVE EQUIPMENT
Not Required When Recommended Work Practices Are Followed.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Follow "Recommended Work Practices For A/C Pipe" Published By A/C Pipe Producers Association.

OTHER PRECAUTIONS
All Tools Which May Release Asbestos Fibers In Excess Of The Exposure Limits Shall Be Provided With Local Exhaust Ventilation Systems.

Note: This Information Is Given Without Warranty, Representation, Inducement Or License Of Any Kind, Except That It Is Accurate To The Best Of Our Knowledge Or Obtained From Sources Believed By Us To Be Accurate, And We Do Not Assume Any Legal Responsibility For Use Or Reliance Upon Same.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Prepared By:
Dr. E.E. Wang

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

Rev. 1-16-86

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
J-M Manufacturing Company, Inc.	(209) 982-1500
ADDRESS (Number, Street, City, State, and ZIP Code): 1051 Sperry Road, Stockton, CA 95206	
CHEMICAL NAME AND SYNONYMS: Fiber Glass	TRADE NAME AND SYNONYMS: PERMASTRAN Pipe
CHEMICAL FAMILY: Silicate Base	FORMULA: N/A

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS		%	TLV (Units)	ALLOYS AND METALLIC COATINGS		%	TLV (Units)
PIGMENTS	N/A			BASE METAL	N/A		
CATALYST	N/A			ALLOYS	N/A		
VEHICLE	N/A			METALLIC COATINGS	N/A		
SOLVENTS	N/A			FILLER METAL PLUS COATING OR CORE FLUX	N/A		
ADDITIVES	N/A			OTHERS	N/A		
OTHERS	N/A						

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV* (Units)
Fiber Glass (Silicate Base) And Organic Surface Treatment Comprising	100	15mg/m^3
2% Or Less Of The Total Weight.		
* As Nuisance Dust (Total Dust) Or 5 mg/m^3 (Respirable Fraction) Over		
8-Hr TWA.		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	2.5
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	Negligible	Softens & Melts (°F)	1000-2000
APPEARANCE AND ODOR	Fiber Form		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)		FLAMMABLE LIMITS		Lel	Uel
	N/A		N/A		

EXTINGUISHING MEDIA
Use That Which Is Appropriate For The Surrounding Fire.

SPECIAL FIRE FIGHTING PROCEDURES
Firefighters Must Wear Full Protective Clothes Including Eye Protection.

UNUSUAL FIRE AND EXPLOSION HAZARDS
This Material Is Non-Combustible And Offers No Unusual Fire Or Explosion Hazards.

(Continued on reverse side)

Fiber Glass

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE
Shown On Page 1

EFFECTS OF OVEREXPOSURE
Skin, Eye And Upper Respiratory Tract Irritation Are Health Effects Associated With Fibrous Glass.

EMERGENCY AND FIRST AID PROCEDURES
Eyes: Flush Well With Water For At Least 15 Minutes. Get Medical Help If Irritation Persists. Skin: Cleanse With Soap & Warm Water. Respiratory: Remove From Exposure.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Glass Is Inert To Many Chemicals But Reacts With Hot, Strong Alkaline Solutions
	STABLE	X	& With Hydrofluoric, Fluosilicic, And Phosphoric Acid.

INCOMPATABILITY *(Materials to avoid)*
Hot/Strong Alkaline Solutions, Hydrofluoric, Fluosilicic, And Phosphoric Acid.

HAZARDOUS DECOMPOSITION PRODUCTS
None Known

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Prevent Spread Of Fibrous Glass Particles And Avoid Dust-Generating Conditions. Collect By Vacuum Or Wet Methods.

WASTE DISPOSAL METHOD
Scrap Material Should Be Buried In A Sanitary Landfill In Accordance With Federal, State, And Local Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*
Not Normally Required; If Necessary, Use A Respirator Designed For Nuisance Type Dusts.

VENTILATION				
	LOCAL EXHAUST	Not Normally Required	SPECIAL	N/A
	MECHANICAL *(General)*	Not Normally Required	OTHER	N/A

PROTECTIVE GLOVES	EYE PROTECTION
Not Normally Required	Not Normally Required

OTHER PROTECTIVE EQUIPMENT
Use Ventilated Hoods For Cutting, Sawing, Grinding The Pipe

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
When Glass Fiber Reinforced Material Is Sawed, Cut, Abraded, Or Machined, Control Of Released Dust Must Be Established.

OTHER PRECAUTIONS
Fiber Glass May Be Released When They Are Cut Or Tooled. Tiny Bits Of Fiberglass Embedded In The Skin Can Lead To Irritation, Itching, & Sometimes Secondary Infection.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

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MATERIAL SAFETY DATA SHEET

Prepared By:
Dr. E.E. Wang

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Rev. 1-16-86

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
J-M Manufacturing Company, Inc.	(209) 982-1500
ADDRESS (Number, Street, City, State, and ZIP Code): 1051 Sperry Road, Stockton, CA 95206	
CHEMICAL NAME AND SYNONYMS: Polyurethane Foam (Cured)	TRADE NAME AND SYNONYMS: Thermal Insulated Pipes
CHEMICAL FAMILY: Polyester & Polyether Based Thermoplastics	FORMULA: [-OCONHRNHCOOR'-]n

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST N/A			ALLOYS N/A		
VEHICLE N/A			METALLIC COATINGS N/A		
SOLVENTS N/A			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES N/A			OTHERS N/A		
OTHERS N/A					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Residual Diisocyanate Monomer	Unknown	
Flame Retardants- Halogenated Hydrocarbon Additives And/Or Antimony Oxide	Unknown	

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	1.2
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Pale Amber Color; Faint Odor;		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LEL	UEL
536°F	N/A		

EXTINGUISHING MEDIA: Water, ABC Dry Powder, Or Protein Type Air Foams

SPECIAL FIRE FIGHTING PROCEDURES: Use Positive Pressure Self-Contained Breathing Apparatus

UNUSUAL FIRE AND EXPLOSION HAZARDS: None Known; Polyurethanes Have Not Been Associated With Creating A Fire Risk In Handling, Storage, or Use. However, Polyurethanes Are Combustible.

(Continued on reverse side)

Polyurethane Foam

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: N/A

EFFECTS OF OVEREXPOSURE: Vapors (If Any) May Cause Respiratory, Eye And Skin Irritation.

EMERGENCY AND FIRST AID PROCEDURES: Wash Skin Or Flush Eyes With Plenty Of Water; If Irritation Persists, Remove From Area, Call Physician.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID: High Temperatures (≥ 536°F)
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*: None Known

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2, Small Amounts Of HCN, Oxides Of Nitrogen, Aromatic/Aliphatic Hydrocarbons

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N/A

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Vacuum Or Sweep Into Container For Disposal. If Dust Conditions Exist, Wear NIOSH Approved Respirator. Do Not Flush Into Public Sewer Or Water System.

WASTE DISPOSAL METHOD: Landfill Or Incineration In Accordance With Federal, State, And Local Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: Not Normally Required

VENTILATION	LOCAL EXHAUST	Not Normally Required	SPECIAL	N/A
	MECHANICAL *(General)*	Not Normally Required	OTHER	N/A

PROTECTIVE GLOVES: Not Normally Required	EYE PROTECTION: Not Normally Required

OTHER PROTECTIVE EQUIPMENT: Not Normally Required

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: When Conveying Or Transferring Polymer, Static Electric Build-Up And Discharge May Occur Which May Ignite Flammable Vapors Or Liquids.

OTHER PRECAUTIONS:

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SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
J-M Manufacturing Company, Inc.	(209) 982-1500
ADDRESS (Number, Street, City, State, and ZIP Code) 1051 Sperry Road, Stockton, CA 95206	
CHEMICAL NAME AND SYNONYMS Epoxy Resins (Cured) [CAS #: 25068-38-6]	TRADE NAME AND SYNONYMS Thermal Insulated Pipes
CHEMICAL FAMILY Epoxides	FORMULA N/A

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST N/A			ALLOYS N/A		
VEHICLE N/A			METALLIC COATINGS N/A		
SOLVENTS N/A			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES N/A			OTHERS N/A		
OTHERS N/A					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Alkyl (C_{12}-C_{14}) Glycidyl Ether [CAS #: 106-92-3]	0.1	N/A
Epichlorohydrin (1-2 ppm) [CAS. #: 106-89-8]		5 ppm (Skin)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	1.17
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	Clear, Colorless To Light-Yellow; Odorless;		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
N/A	N/A		

EXTINGUISHING MEDIA: CO_2, Foam, Dry Chemicals, Water

SPECIAL FIRE FIGHTING PROCEDURES: Use Self-Contained Breathing Apparatus To Avoid Inhaling Smoke Or Fumes.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: Shown On First Page

EFFECTS OF OVEREXPOSURE: Eye & Skin Irritation; May Also Cause Skin Sensitization (Allergy) Which Can Be Evidenced By Rashes, Especially Hives.

EMERGENCY AND FIRST AID PROCEDURES: Inhalation: Remove To Fresh Air, Give Oxygen If Necessary. Skin: Wash With Plenty Of Water And Soap If Available. Eyes: Flush With Water For At Least 15 Minutes, Call Physician. Ingestion: Do NOT Induce Vomiting, Call Physician.

SECTION VI - REACTIVITY DATA

STABILITY			CONDITIONS TO AVOID
	UNSTABLE		Highly Sensitive Persons May React To Cured Resins
	STABLE	X	Containing Small Amounts Of Unreacted Amine Hardeners.

INCOMPATABILITY *(Materials to avoid)*: Strong Oxidizing Agents, Strong Lewis Or Mineral Acids

HAZARDOUS DECOMPOSITION PRODUCTS: CO, CO_2, Aldehydes, and Acids

HAZARDOUS POLYMERIZATION			CONDITIONS TO AVOID
	MAY OCCUR		None
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Broadcast Absorbent Material, Soak Up Resin And Discard.

WASTE DISPOSAL METHOD

Place In An Appropriate Disposal Facility In Compliance With Federal, State, And Local Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: Not Ordinarily Required.

VENTILATION				
	LOCAL EXHAUST	Not Ordinarily Required	SPECIAL	N/A
	MECHANICAL *(General)*	Not Ordinarily Required	OTHER	N/A

PROTECTIVE GLOVES	EYE PROTECTION
Not Ordinarily Required	Not Ordinarily Required

OTHER PROTECTIVE EQUIPMENT: Use Ventilated Hoods For Grinding, Sawing, Drilling, Or Polishing The Molded Laminate.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Sawing, Machining, And Other Manipulations Of Solid Cured Resins That Produce Heat May Give Rise To Degradation Products That Contain Free Amines Or Unreacted Epichlorohydrin.

OTHER PRECAUTIONS: Sanding, Grinding, Or Drilling The Cast Of Hardened Epoxy Resins Or Laminates May Cause Tiny Particles Of Materials To Become Embedded In Skin.

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