MSDS ID: 8061073

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT PART NUMBER: 8061073
DESCRIPTION: 7281 SILVER 35-M

COMPANY:
Markem Corporation
150 Congress Street
Keene, NH 03431

EMERGENCY RESPONSE NUMBERS:
Transportation:
United States: (800) 424-9300
International: (703) 527-3887(collect)
Product Safety and Environmental:
(603) 352-1130

2. HAZARDOUS INGREDIENTS

COMPONENT	CAS #	PCT(WT)
Aluminum	7429-90-5	3-7
Dioctyl phthalate	117-81-7	1-5
Neopentyl glycol diglycidyl ether	17557-23-2	0.5-1.5
Tributyl phosphate	126-73-8	7-13
Propylene carbonate	108-32-7	1-5
Cycloaliphatic epoxy resin	2386-87-0	10-30

Exposure and physical property information is presented in Section 9.
If the total percentage is less than 100, the balance of this product is not considered to be hazardous as defined in the OSHA Hazard Communication Standard (29 CFR 1910.1200).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HMIS RATING SYSTEM
Health: 3
Flammability: 1
Reactivity: 0
Protection: B

NFPA RATING SYSTEM
Health: 3
Flammability: 1
Reactivity: 0

POTENTIAL HEALTH CONSIDERATIONS

LIKELY ROUTES OF ENTRY:
Contact; Inhalation; Absorption; Ingestion

TARGET ORGANS:
Respiratory Tract; Eyes; Skin; Liver; Kidneys; Bladder; Nervous System; Lungs;

3. HAZARDS IDENTIFICATION (Cont.)

POTENTIAL IMMEDIATE EFFECTS FROM OVEREXPOSURE

EYE CONTACT
Can cause severe eye irritation, tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.

SKIN CONTACT
Can cause severe skin irritation, defatting, and dermatitis. Not likely to cause permanent skin damage.
Skin Sensitizer! Avoid exposure. If sensitized, repeated exposures will result in skin irritation, even at very low concentrations.

SKIN ABSORBTION
Toxic if absorbed through the skin causing systemic damage.

INHALATION
Can cause respiratory irritation, dizziness, weakness, fatigue, nausea, headache and possible unconsciousness.

INGESTION
Toxic. If swallowed, may cause abdominal discomfort, nausea, vomiting, diarrhea and systemic poisoning.

POTENTIAL LONG-TERM EFFECTS FROM OVEREXPOSURE:

CANCER INFORMATION
Contains a substance that can cause cancer in laboratory animals at high oral doses. Not a carcinogen according to NTP, IARC, or OSHA.
No IARC cancer hazard information available.
No ACGIH cancer hazard information available.
No NTP cancer hazard information available.
No OSHA cancer hazard information available.

REPRODUCTIVE SYSTEM INFORMATION
None of the substances in this product have been shown to cause reproductive system disorders.

ADDITIONAL HEALTH HAZARD INFORMATION

Dioctyl phthalate (DOP): This substances is listed as a potential carcinogen by the NTP and the IARC.
Neopentyl glycol diglycidyl ether: This substance was found to be carcinogenic in skin painting tests on mice. This material may be mutagenic based on laboratory tests. A small residual of epichlorohydrin remain and has been has been shown to produce cancer in lab animals.
Tributyl phosphate: TBP was found not to be neurotoxic either acutely at 1000 mg/kg or after three months of exposure at up to 325 mg/kg/day. Assuming similar absorption of TBP by oral and inhalation routes of exposure and a breathing rate of approximately 170 mL/min, these values are approximately equivalent to inhalation exposures of 4900 mg/cu m acutely and 1590 mg/cu m

3. HAZARDS IDENTIFICATION (Cont.)

per day subchronically. The ACGIH TLV (TWA) for TBP is 2.2 mg/cu m. This indicates that a minimum of a 700-fold safety factor exists for TBP as a potential neurotoxin(1). Large doses have been reported to cause dyspnea, weakness, pulmonary edema, and twitching in rats. Chronic inhalation of large doses can lead to general poisoning with paralysis, urinary bladder hyperplasia, and increased liver weight.(1) Healy, C.E.; Beyrouty, P.C.; and Broxup, B.R., Am. Ind. Hyg. Assoc J. 56:349-355 (1995).

MEDICAL CONDITIONS POTENTIALLY AGGRAVATED BY OVEREXPOSURE

4. FIRST AID MEASURES

EYE CONTACT
Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Get immediate medical attention.

SKIN CONTACT
Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

INHALATION
Remove to fresh air. If not breathing, perform rescue breathing and, if available, have a trained person administer oxygen.
Get medical attention immediately.

INGESTION
Emergency personnel should be contacted immediately and be provided with this MSDS. For ingestion of small quantities of chemicals, the risk associated with inducing vomiting usually exceeds the poisoning risk.

5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA
FLASH POINT: 239 F, 114 C
EXPLOSIVE/FLAMMABILITY LIMITS ESTIMATED FROM INGREDIENTS:
LOWER LIMIT: 0.3 %
UPPER LIMIT: 32.5 %
AUTOIGNITION TEMPERATURE ESTIMATED FROM INGREDIENTS:
770 F, 410 C

GENERAL HAZARDS
Material may ignite if heated to temperatures above the flash point in the presence of a source of ignition.

EXTINGUISHING MEDIA
Small Fires: Dry chemical, CO2, water spray or alcohol-resistant foam. Large Fires: Water spray, fog or alcohol-resistant foam. Move containers from fire area if it can be done without risk. Apply cooling water to containers that are exposed to flames until well after fire is out.

FIRE FIGHTING INSTRUCTIONS

5. FIRE FIGHTING MEASURES (Cont.)

Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location. Heat may build pressure and rupture closed containers, spreading fire and increasing risk of burns or injuries. Use water spray/fog for cooling. Even if material is water soluble, it may not be practical to extinguish fire by water dilution. Notify authorities if liquid enters sewers or other public waters.

HAZARDOUS COMBUSTION PRODUCTS
carbon dioxide; carbon monoxide; fluorine containing gases; smoke; phosphorus compounds

6. ACCIDENTAL RELEASE MEASURES

SPILL CLEAN-UP PROCEDURES
Prevent the spread of any spill to minimize harm to human health and the environment. Dike with suitable absorbent material. Wear complete and proper personal protective equipment and ventilate the area.

HEALTH CONSIDERATIONS AND PROTECTIVE EQUIPMENT
Information on the selection and use of personal protective equipment is found in Section 8 of this MSDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; material spilled, quantity, the area in which it occurred and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits and consider that the evaporation of volatile solvents can lead to the displacement of air creating an environment that can cause asphxyiation.

7. HANDLING AND STORAGE

HANDLING
Avoid contact with material, avoid breathing vapors, use only in a well ventilated area.

STORAGE
Store in a cool, dry place. Isolate from incompatible materials.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS
Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep exposure to airborne contaminants below the TLV, PEL, or other recommended exposure limit and/or maintain operator comfort.

Facilities storing or using this material should be equipped with an eyewash and safety shower.

RESPIRATORY PROTECTION
If air monitoring indicates airborne concentrations at or above the limits,

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION (Cont.)

or symptoms of inhalation over-exposure occur, a respiratory protection program may be required. Engineering controls to reduce the exposure below acceptable limits are usually preferable to a respirator program.

EYE PROTECTION
Chemically resistant safety glasses with side shields must be worn when handling this product. Further eye protection such as chemical splash goggles and/or face shield must be worn when the possibility exists for eye contact due to splashing or spraying liquid or airborne particles. Contact lenses should not be worn. An eye wash station should be available.

SKIN PROTECTION
Prevent skin contact by wearing gloves and other protective equipment. Inspect gloves for chemical break-through and replace if detected. Clean protective equipment thoroughly after each use. Do not remove from workplace. An emergency shower in the area is recommended.
Appropriate gloves to be used for MARKEM products that are mixtures have not been determined. Glove type(s) for ingredients present at 10% or more (if known) are:
Butyl rubber, Polyethylene, Polyvinyl chloride,

9. PHYSICAL AND CHEMICAL PROPERTIES - PRODUCT

APPEARANCE:	Liquid, semi-solid, or solid
COLOR:	See description in Section 1.
ODOR:	Mild solvent odor
SPECIFIC GRAVITY(g/ml):	1.71
PERCENT VOLATILE:	14
VOC CONTENT(lb/gl):	Not determined
VAPOR PRESSURE (Pa):	Not determined
BOILING PT OR RANGE(F):	ND
pH:	NA
VISCOSITY:	ND
VAPOR DENSITY:	Heavier than air
FREEZING POINT(F):	ND
EVAPORATION RATE:	<0.01 (n-Butyl acetate = 1)

9.1 EXPOSURE, PHYSICAL AND CHEMICAL PROPERTIES FOR COMPONENTS

COMPONENT	ACGIH		OSHA	
	TWA\CEIL	STEL	TWA	CEIL
7429-90-5	NE	NE	NE	NE
117-81-7	5 mg/m3	10 mg/m3	5 mg/m3	NE
17557-23-2	NE	NE	NE	NE
126-73-8	0.2 ppm	NE	0.2 ppm	NE
108-32-7	NE	NE	NE	NE
2386-87-0	NE	NE	NE	NE

COMPONENT CAS NUMBER	SPECIFIC GRAVITY	EVAP RATE N-BUTYL ACETATE=1	WATER SOLUBILITY Weight %	VAPOR PRESSURE mmHg at F

9.1 EXPOSURE, PHYSICAL AND CHEMICAL PROPERTIES FOR COMPONENTS (Cont.)

7429-90-5	1.000	ND	ND	ND
117-81-7	1.000	ND	ND	ND
17557-23-2	1.060	ND	ND	ND
126-73-8	0.980	<0.01	Negligible;7.3@302F	
108-32-7	1.207	0.5-2	Low; 10-24%.03@20	
2386-87-0	1.175	ND	ND	ND

10. STABILITY AND REACTIVITY

STABILITY
Stable under normal conditions.

CONDITIONS TO AVOID
Elevated temperatures in combination with sparks, open flames, or other sources of ignition.

INCOMPATIBILITY
None Known; acids; caustics (bases); strong oxidizing agents;

HAZARDOUS DECOMPOSITION PRODUCTS
carbon dioxide; carbon monoxide; fluorine containing gases; smoke; phosphorus compounds

11. TOXICOLOGICAL INFORMATION

Di(2-ethylhexyl)phthalate:
Oral TDLo man: 143 mg/kg Effect: Gastrointestinal
Oral LD50 rat: 30600 mg/kg
Skin LDLo rat: 4 gm/kg
Carcinogenicity:
IARC: Group 2B Probable Human Carcinogen
ACGIH: A3 Confirmed animal carcinogen
Reproductive toxicity: Developmental male reproductive effects (Cammack, et al, 2003)

Neopentyl glycol diglycidyl ether:
Oral LD50 rat: 4500 mg/kg
Tributyl phosphate:
Acute toxicity:
Oral LD50 rat: 1390 mg/kg, Effect: kidney, ureter, bladder (changes in (tubules)
Inhalation LC50 rat: 28 gm/m3/1H

Eye rabbit: 500 mg, Effect: Severe

Propylene carbonate
LD50 (oral, rat): 29 g/kg
LD50 (oral, mouse): 20.7 g/kg
LD50 (dermal, rabbit): 24 g/kg

12. ECOLOGICAL INFORMATION

Dioctyl phthalate (DEHP):
LC50 Lepomis macrochirus (Bluegill) > 770,000 ug/l/96 hr,
LC50 Daphnia magna: 1,000-5,000 ug/l/48 hr.
DEHP in water will biodegrade (half-life 2-3 wk), adsorb to sediments and biconcentrate in aquatic organisms.
Atmospheric DEHP will be carried long distances and be removed by rain.

13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with all federal, state, local or provincial regulations.

14. TRANSPORT INFORMATION, DOT and IATA:

DOT & IATA: NOT RESTRICTED

15. REGULATORY INFORMATION

Those ingredients appearing on the following list that do not appear in Section 2 are present at <0.1% for carcinogens, <1% for other hazardous substances, or are not considered hazardous in this product.
UNITED STATES OF AMERICA
FEDERAL REGULATIONS
CERCLA: The following components have CERCLA reportable quantities:

CASRN	DESCRIPTION	CERCLA RQ	WEIGHT%
117-81-7	DIETHYLHEXYL PHTHALATE	100 lb final RQ; 45.4 kg final RQ	4

RCRA: The following components are subject to RCRA land disposal restrictions:

CASRN	DESCRIPTION

None
SARA TITLE III
SECTION 302 Extremely Hazardous Substances (EHS)

CASRN	DESCRIPTION

None
SECTION 311/312 Community Right to Know

CASRN	DESCRIPTION
7429-90-5	ALUMINUM
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE (DEHP)

SARA HAZARD CATEGORY INFORMATION
FIRE: NO
SUDDEN RELEASE OF PRESSURE: NO
REACTIVE: NO
IMMEDIATE (ACUTE) HEALTH HAZARD: NO
DELAYED (CHRONIC) HEALTH HAZARD: NO
SECTION 313 Toxic Chemical Release Inventory Reporting (TRI)

CASRN	DESCRIPTION	
7429-90-5	ALUMINUM	7
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE (DEHP)	4

TSCA

15. REGULATORY INFORMATION (Cont.)

SECTION 8(b) Inventory: All chemicals in this product appear in the inventory or are exempt from the listing requirements.

SECTION 12(b) Export: The following chemicals are subject to export reporting

CASRN	DESCRIPTION
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE
126-73-8	TRIBUTYL PHOSPHATE

STATE REGULATIONS

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65)

The following chemical(s) in this product are known to the State of California to cause cancer:

CASRN	DESCRIPTION	WGT%
71-43-2	BENZENE	<0.001
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	1-5
106-89-8	EPICHLOROHYDRIN	<0.001
75-21-8	ETHYLENE OXIDE	<0.001
123-91-1	1,4-DIOXANE	<0.001

The following chemical(s) in this product are known to the State of California to be hazards to reproductive health:

CASRN	DESCRIPTION	WGT%
CASRN	DESCRIPTION	<0.001
71-43-2	BENZENE	1-5
117-81-7	DI(2-ETHYLHEXYL)PHTHALATE	

MASSACHUSETTS Right to Know Law

CASRN	DESCRIPTION	%
7429-90-5	ALUMINUM	3-7
117-81-7	DI-SEC-OCTYL PHTHALATE	1-5
126-73-8	TRIBUTYL PHOSPHATE	7-13

NEW JERSEY Right to Know Law

CASRN	DESCRIPTION	%
7429-90-5	ALUMINUM	3-7
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	1-5
126-73-8	TRIBUTYL PHOSPHATE	7-13

PENNSYLVANIA Right to Know Law

CASRN	DESCRIPTION	%
7429-90-5	ALUMINUM	3-7
117-81-7	1,2-BENZENEDICARBOXYLIC ACID, BIS(2-ETHYLHEXYL) ESTER	1-5
126-73-8	TRIBUTYL PHOSPHATE	7-13

16. OTHER INFORMATION

Note: A CAS number in the form TSXXXX-XX-X is a trade secret.
NA= Not applicable
ND= Not determined
TS= Trade secret

MSDS prepared by Richard C. Berry

This information is offered in good faith as typical values and not as product specifications. No warranty, either expressed or implied, is made. The

16. OTHER INFORMATION (Cont.)

recommended industrial hygiene and safe handling practices are believed to be generally applicable, however each user must review the recommendations and determine the suitablity for their intended use.