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 Revised 3/25/05  
 Replaces 3/25/05  
 Printed 3/25/05

MSDS ID: 8055217

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT PART NUMBER: 8055217  
 DESCRIPTION: 7224 GREY 328-J

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)
C.I. Pigment Red 101	1332-37-2	5-10
Castor oil, hydrogenated	8001-78-3	1-5
Formaldehyde	50-00-0	0.1-1
Cyclohexane- 1,2-dicarboxylic anhydride	85-42-7	1-5
Tributyl phosphate	126-73-8	10-30
Copper Chromite Black Spinel	68186-91-4	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: 1  
 Protection: B

#### NFPA RATING SYSTEM

Health: 3  
 Flammability: 1  
 Reactivity: 1

### POTENTIAL HEALTH CONSIDERATIONS

#### LIKELY ROUTES OF ENTRY:

Inhalation; Contact

#### TARGET ORGANS:

Skin; Nervous System; Respiratory Tract; Eyes; Liver; Bladder;

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### 3. HAZARDS IDENTIFICATION (Cont.)

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#### 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 ABSORPTION

No skin absorption hazard in normal industrial use.

##### INHALATION

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

Respiratory Sensitizer! Avoid exposure. If sensitized, repeated exposures will result in respiratory irritation and shortness of breath, even at very low concentrations. These asthma-type symptoms may develop immediately or be delayed up to several hours.

##### INGESTION

Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.

#### POTENTIAL LONG-TERM EFFECTS FROM OVEREXPOSURE:

##### CANCER INFORMATION

Contains a substance that is a possible cancer hazard based on human studies.

No IARC cancer hazard information available.

Classified by ACGIH as A2: Suspected human carcinogen.

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

Formaldehyde: Exposure to formaldehyde vapor at concentrations >1 ppm may cause significant irritation of the eyes and respiratory tract. Irritation threshold is about 0.3 ppm. Formaldehyde was found to be weakly active in in vitro genotoxicity tests, but inactive in vivo. Lifetime inhalation of formaldehyde vapor at concentrations above 5 ppm for 6 hours/day caused nasal tumors in laboratory 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

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### 3. HAZARDS IDENTIFICATION (Cont.)

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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 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

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### 4. FIRST AID MEASURES

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#### EYE CONTACT

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

#### SKIN CONTACT

Wash skin 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.

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### 5. FIRE FIGHTING MEASURES

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#### FLAMMABILITY DATA

FLASH POINT: 241 F, 116 C

EXPLOSIVE/FLAMMABILITY LIMITS ESTIMATED FROM INGREDIENTS:

LOWER LIMIT: ND %

UPPER LIMIT: ND %

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

Use alcohol foam, carbon dioxide (CO2) or dry chemical. Water may not be effective to extinguish fire. Use water spray to cool fire-exposed containers and to protect personnel.

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## 5. FIRE FIGHTING MEASURES (Cont.)

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### FIRE FIGHTING INSTRUCTIONS

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; phosphorus compounds

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## 6. ACCIDENTAL RELEASE MEASURES

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### SPILL CLEAN-UP PROCEDURES

Shut off ignition sources; smoking, flames or other sources of ignition must not be permitted in the area. Small Spills: Take up with sand or other noncombustible absorbent material and put into properly labeled containers for disposal. Large Spills: Dike ahead of liquid spill area to minimize migration and vapor generation. Ventilate the area. Get professional help from outside contractors, the fire department or your trained spill brigade.

### 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 asphyxiation.

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## 7. HANDLING AND STORAGE

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### 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.

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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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### 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.

### RESPIRATORY PROTECTION

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION (Cont.)

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

9. PHYSICAL AND CHEMICAL PROPERTIES - PRODUCT

APPEARANCE: Liquid, semi-solid, or solid  
 COLOR: See description in Section 1.  
 ODOR: No odor  
 SPECIFIC GRAVITY(g/ml): 1.57  
 PERCENT VOLATILE: 23  
 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
1332-37-2	10 mg/m3	NE	NE	NE
8001-78-3	NE	NE	NE	NE
50-00-0	0.3 ppm C	2 ppm	0.75 ppm	NE
85-42-7	NE	NE	NE	NE
126-73-8	0.2 ppm	NE	0.2 ppm	NE
68186-91-4	NE	NE	NE	NE

  

	SPECIFIC GRAVITY	EVAP RATE N-BUTYL	WATER SOLUBILITY	VAPOR PRESSURE
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9.1 EXPOSURE, PHYSICAL AND CHEMICAL PROPERTIES FOR COMPONENTS (Cont.)

COMPONENT CAS NUMBER	ACETATE=1	Weight %	mmHg at F
1332-37-2	4.900	ND	insoluble ND
8001-78-3	1.000	ND	ND
50-00-0	1.000	ND	ND
85-42-7	1.190	ND	0 % 1.1mmHg @ 100 C
126-73-8	0.980	<0.1	0.1% 7.3@302F
68186-91-4	5.200	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**

acids; caustics (bases); strong oxidizing agents;

**HAZARDOUS DECOMPOSITION PRODUCTS**

carbon dioxide; carbon monoxide; phosphorus compounds

11. TOXICOLOGICAL INFORMATION**CASTOR OIL, HYDROGENATED:**

LD50 (oral, rat): > 10,000 mg/kg  
Skin irritation(rabbit): 500 mg/24hr (mild irritant)  
Eye irritation(rabbit): 100 mg/24hr (mild irritant)

**Formaldehyde:**

LD50 (oral, rat): 590 mg/kg  
LC50 (inh, rat): 1000 mg/m3 (30-minute exposure).  
LD50 (dermal, rabbit): 270 mg/kg.

**CARCINOGENICITY:** Rats and mice were exposed to 0, 2, 5.6 and 14.3 ppm formaldehyde for 2 years and observed for an additional 6 months. Significant increases in the incidence of squamous cell carcinomas in the nasal cavities were observed in the rats exposed to 14.3 ppm. Two nasal cancers were observed in the mice. Male monkeys, rats and hamsters were exposed to up to 3 ppm for 22 hours per day for 26 wks. Non-cancerous growths were observed in the noses of the monkeys and rats. No effects were demonstrated in the hamsters.

**IARC evaluation of the carcinogenicity of formaldehyde to experimental animals:** sufficient evidence.

**SKIN SENSITIZATION:** Formaldehyde was a potent skin sensitizer in guinea pigs.

**Tributyl phosphate:**

Eye rabbit: 500 mg, Effect: Severe  
Oral LD50 rat: 1390 mg/kg, Effect: kidney, ureter, bladder

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 11. TOXICOLOGICAL INFORMATION (Cont.)
 

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(Changes in tubules).

Inhalation LC50 rat: 28 gm/m3/1H

C.I. Pigment Black 28:

Contains chromium (III). It is an inorganic mixture of copper oxide(II) and chromium (III) oxide which are homogenously and ionically interdiffused to form a crystalline matrix of spinel. It is insoluble in water.

LD50 (oral, rat) >5,000 mg/kg

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 12. ECOLOGICAL INFORMATION
 

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No information available.

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 13. DISPOSAL CONSIDERATIONS
 

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

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 14. TRANSPORT INFORMATION, DOT and IATA:
 

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DOT & IATA: NOT RESTRICTED

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 15. REGULATORY INFORMATION
 

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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%
50-00-0	FORMALDEHYDE	100 lb final RQ; 45.4 kg final RQ	0
67-56-1	METHANOL	5000 lb final RQ; 2270 kg final RQ	0
71-36-3	N-BUTYL ALCOHOL	5000 lb final RQ; 2270 kg final RQ	1

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

CASRN	DESCRIPTION
67-56-1	METHANOL
71-36-3	N-BUTYL ALCOHOL

SARA TITLE III

SECTION 302 Extremely Hazardous Substances (EHS)

CASRN	DESCRIPTION
50-00-0	FORMALDEHYDE

SECTION 311/312 Community Right to Know

CASRN	DESCRIPTION
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15. REGULATORY INFORMATION (Cont.)

50-00-0 FORMALDEHYDE  
 67-56-1 METHANOL  
 71-36-3 N-BUTYL ALCOHOL

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	
50-00-0	FORMALDEHYDE	0
67-56-1	METHANOL	0
71-36-3	N-BUTYL ALCOHOL	1

TSCA  
 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
71-36-3	N-BUTYL ALCOHOL
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
50-00-0	FORMALDEHYDE

The benzene content of this material is <80 ppm. The bisphenol A and epichlorohydrin content is <1 ppm.

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

CASRN	DESCRIPTION
None	

MASSACHUSETTS Right to Know Law

CASRN	DESCRIPTION	%
1309-37-1	IRON OXIDE FUME	8
50-00-0	FORMALDEHYDE	0
126-73-8	TRIBUTYL PHOSPHATE	22

NEW JERSEY Right to Know Law

CASRN	DESCRIPTION	%
1309-37-1	IRON OXIDE FUME	5-10
50-00-0	FORMALDEHYDE	0.1-1
85-42-7	HYDROHEXAPHTHALIC ANHYDRIDE	1-5
126-73-8	TRIBUTYL PHOSPHATE	10-30

PENNSYLVANIA Right to Know Law

CASRN	DESCRIPTION	%
1309-37-1	IRON OXIDE	5-10
50-00-0	FORMALDEHYDE	0.1-1
126-73-8	TRIBUTYL PHOSPHATE	10-30

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16. OTHER INFORMATION

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Copper Chromite Black Spinel: This pigment is a crystalline compound, not a mixture. It contains the following SARA III, 313 reportable chemicals: Chromium (III), 42%; Copper, 26%; Manganese, 2%.

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