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BRIDGE DECK & ROADWAY REHABILITATION SYSTEMS

MSDS: MEKP (DDM-9)

Emergency Phone Number: (800) 373-7542

SECTION 1 IDENTIFICATION

Product Name: Methyl Ethyl Ketone Peroxide, DDM-9, Hipoint 90, MEKP-9

Components	CAS Number	Typical %	OSHA
Methyl Ethyl Ketone Peroxide	1338-23-4	32-34	y
Hexylene Glycol	107-41-5	6%	y
2,2,4-trimethyl-1,3pentanediol,diisobutyrate	6846-50-0	58%	y
Hydrogen Peroxide	7722-84-1	< 1%	y
Methyl Ethyl Ketone	78-93-3	< 2%	y
Proprietary Ingredient	NJTSN 03365400-5071P	<1%	y

The substance (s) marked with a y in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are either on the TSCA Inventory list or exempt as impurities.

Product Code: None Assigned
Chemical Family: Organic Peroxide
Formula: Mixture

SECTION 2 PHYSICAL AND CHEMICAL DATA

Boiling Point F: N/E
Vapor Pressure: 5.2 torr@19 C
Vapor Density: > 1
Solubility in Water: Slight
Appearance and Odo: clear oily liquid, ketone odor
Specific Gravity: 1.0088 @ 20 C
pH: N/A
Viscosity: 17.3 cps @ 20 C

Other Data

Active Oxygen: 8.7-9.0%
Refractive Index: 1.4356

SECTION 3 HEALTH HAZARD INFORMATION

Threshold Limit Value: 1.5 mg/m3 for methyl ethyl ketone peroxides

Routes of Exposure

Eye: Eye contact causes severe corrosion and may cause blindness.
Skin: Severe skin irritant, causes redness, blistering, and edema.
Inhalation: Moderately toxic by inhalation
Ingestion: Human systemic effects by ingestions: changes in structure or function of esophagus, nausea, or vomiting, and other gastrointestinal effects.

Effects of Over Exposure: Prolonged inhalation of vapors may cause mucous membrane irritation and vertigo. There are no known medical conditions, which are recognized as being aggravated by exposure.

SECTION 4 EMERGENCY AND FIRST AID PROCEDURES

Overview

- Danger!
- Organic Peroxide
- Causes Eye Burns. May cause blindness
- Harmful if swallowed
- Causes skin irritation
- May cause respiratory tract irritation
- May cause allergic skin reaction

Skin contact and inhalation are expected to be the primary routes of exposure to this material. Based on its composition, it is anticipated to be moderately toxic if swallowed, slightly toxic if absorbed through skin, practically non-toxic if inhaled, severely irritating to skin and corrosive to eyes.

Prolonged and repeated contact may cause an allergic skin reaction. Overexposure to vapor may lead to digestive disorders, narcosis and central nervous system effects such as headache, dizziness, loss of coordination, loss of consciousness or convulsions. If swallowed, this material may cause CNS effects as noted above, irritation of the mouth, throat and stomach, and in severe cases, death.

First Aid Measures

Eye Contact: Immediately flush with large amounts of water for 15 minutes. See medical aid.
Skin Contact: Remove contaminated clothing. **Wash thoroughly with soap and water.** If irritation persists, seek medical aid. Wash contaminated clothing before reuse.
Inhalation: Remove from exposure. If **breathing has stopped or** is difficult, administer artificial respiration or oxygen as indicated. See medical aid.
Ingestion: Take large quantities of milk or water and immediately call a physician. For aid to physician, suggest local Poison Control Center.
Note to Physician: Patient should be examined for burns to mouth, throat, esophagus, and stomach. Large volumes of ingested CHP should be removed by gastric lavage with a large bore tube being careful not to cause aspiration of the compound during the removal.

SECTION 5 FIRE AND EXPLOSION HAZARD INFORMATION

Flash Point & Method: > 100 C
Autoignition Temp: ND
Flammable Limits (% by volume/air): Unknown

Extinguishing Media: Use water spray, carbon dioxide, dry chemical or foam.

Fire-fighting procedures: Wear complete fire service protective equipment, including full-face MSHA/NIOSH approved self-contained breathing apparatus. Use water to cool fire-exposed container/structure/ protect personnel. Large fires – fire fighting best done at a distance/protected location.

Fire and Explosion Hazards: Heat/fire conditions: Exposure of containers to fire results in rapid product decomposition, container pressure build-up and failure, followed by vigorous burning with flare effect. Cleanup should not be attempted until all of the product has completely cooled. Dry chemical fire extinguishing agent may catalyze the decomposition.

SECTION 6 SPILL, LEAK, AND DISPOSAL INFORMATION

Spill or Leak Procedures: Dike to prevent runoff from entering drains,sewers, streams, etc. and transfer into containers. Spilled material should be swept up with an inert, moist diluent such as perlite, vermiculite, or sand, and placed in a clean polyethylene lined drum or a polyethylene drum.

Waste Disposal: Dispose of in accordance with local, state, and federal regulations.

SECTION 7 PERSONAL PROTECTION INFORMATION

Eye Protection: Industrial safety glasses, minimum. As necessary to comply with 29 CFR 1910.133 and work area conditions: use side shields, goggles or face shield. Chemical goggles; face shield (if splashing is possible).

Skin Protection: As required, industrial resistant flexible-type gloves (polyvinyl alcohol, **polyethylene, or equal – see Section 8).** Wear industrial-type work clothing and safety footwear. Depending on working conditions, i.e., contact potential, wear resistant protective garments such as aprons, jackets, pants, coveralls, boots, etc.

Respiratory Protection: Not required under normal use conditions. If ventilation does not maintain inhalation exposures below TLV(PEL), use MSHA/NIOSH approved units as per current exposure limits and areas below flammable vapor concentrations. Local exhaust is necessary for use in enclosed or confined spaces.

Other: A safety shower and eyewash is recommended when the risk of a significant exposure exists.

SECTION 8 PERSONAL HANDLING INSTRUCTIONS

Handling: Avoid prolonged or repeated breathing of vapors, mists or fumes. Avoid prolonged or repeated contact with skin or eyes. Handle and use in accordance with OSHA 29CFR1910.106/local codes. Do not wear contaminated clothing. Discard contaminated footwear. See Section 10 – Reactivity Data.

Storage: Store in areas/buildings designed to comply with OSHA 1910.106. Keep in a closed, labeled container within a cool (well shaded), dry – ventilated area. Protect from physical damage. Cool storage at 80 F or below is recommended for longer shelf life and stability. Prolonged storage at elevated temperatures of 100 F and higher will cause product degradation, gassing and potential container rupture which can result in a fire and/or explosion.

Other: Not for use or storage in or around the home. Do not use pressure to empty drums. Do not use without fully understanding Section 9 – Reactivity Data. See Section 12 - Comments for additional information. MEKP should never be added to hot solvents or monomers as a violent decomposition and/or reaction may result. When using spray equipment, never spray raw MEKP onto curing or into raw resin or flues. Keep MEKP in its original container. DO NOT STORE WITH FOOD OR DRINK. DO NOT USE NEAR FOOD OR DRINK.

Unmixed, uncontaminated material, remaining at the end of the day, shall be returned to a proper organic peroxide storage area. Under no circumstances should material be returned to the original container.

SECTION 9 REACTIVITY DATA

Conditions Contributing to Instability(Incompatability): Dimethylaniline, cobal napththenate, and other promoters, promoted resins, accelerators, reducing agents, strong acids, bases, metqals, metal alloys and salts, sulfur compounds, amines or any hot material.

Stability: Stable at room temperatures out of direct sunlight.

Hazardous Decomposition
Products: Decomposition products are flammable. Acrid smoke and irritating fumes will evolve

Hazardous Polymerization: will not occur

SECTION 10 DISPOSAL CONSIDERATIONS

Waste must be disposed of in accordance with federal, state, provincial and local regulations.

Container Disposal: Empty containers by removing the top and inverting to allow all free flowing product to drain. To meet regulatory criteria, the container is considered empty when less than 3% remains in the container. Additional special handling is not typically required and the empty container can be discarded with other non-hazardous trash.

Note: Local disposal regulations may be more stringent and require additional restrictions or precautions. Customers should check with their local disposal company, municipal or state authority. Recycle of plastic or metal containers may require clean rather than empty containers. In this case the containers can be rinsed with mineral spirits until the containers are considered generally product free.

SECTION 11 TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Methyl Ethyl Ketone Peroxide (s): Single exposure (acute) studied indicate that this material is moderately toxic if swallowed (rat LD =50 484 mg/kg), slightly toxic if absorbed through skin (rabbit LD50 4000mg/kg), practically non-toxic if inhaled (rat 4-hr IC50 17-50 mg/l), corrosive to rabbit eyes and moderately irritating to rabbit skin (4-hr exposure, 4.5/8.0)

Following an allergic skin reaction in a paint sprayer, patch testing produced an allergic skin reaction with this material as well as other components of a paint. However, subsequent patch testing produced no allergic skin reaction si 34 healthy subjects. No skin allergy was observed in guinea pigs following repeated exposure. Repeated oral administration resulted in decreased body weight, mild liver and kidney injury and death in rats. Following repeated application to the skin of rats an dmice, severe skin damage and animal deaths (only at the highest dose levels) were the primary effects. Spleen and bone marrow changes considered secondary to the severe skin damage were noted in animals at the high doses. Higher doses applied to rat and mouse skin for a shorter time produced similar effects. Long-term repeated skin application was reported to enhance skin tumor production in mice irradiated with UVB. Genetic changes were observed in tests using bacteria or animal cells. However, no genetic changes occurred in a test using animals.

2,24-Trimehtyl-1,3 Pentandiol Diisobutyrate: Single exposure 9acute) studies indicate that this material is no more than slightly toxic if swallowed (rat LD50 >3,200mg/kg), practically non-toxic if absorbed through skin (guinea pig LD50>20ml/kg) or inhaled (rat 6-hr IC50>5.3mg/l), and slightly irritating to rabbit eyes and gyunea oug skin.

No skin allergy was observed in guinea pigs following repeated exposures. Increased liver weights, which were probably adaptive changes due to the induction of drug metabolizing enzymes in these tissues, were observed in rats or dogs following long-term administration in their feed. This material is eliminated in the excreta of rats following a single oral dose with little or no retention in the tissues or organs.

Hexylene Glycol: Single exposure (acute) studies indicate that this material is slightly toxic if swallowed (rat, rabbit, mice and guinea pig LD502800-4700mg/kg), practically non-toxic if absorbed through skin (rabiit LD50 12,200-13200 mg/kg), severely irritating to rabbit eyes and moderately irritating to rabbit skin. No deaths occurred in rats exposed to about 160 ppm for 8 hours.

No skin allergy was observed in guinea pigs following repeated exposure. Sin application showed minimal irritation and no skin allergy in humans. Patch tests have shown allergic responses in individuals working with cutting oils. Short-term inhalation exposure produced no adverse effects in rats and rabbits. Repeated exposure in the diet produced no adverse effects on growth, behavior or fertility in rats, although kidney changes were noted, and some signs of developmental toxicity were observed at doses which produced maternal toxicity. No genetic changes were observed in tests using bacteria or animal cells.

Methyl Ethyl Ketone Single exposure(acute) studies indicate that this material is no more than slightly toxic if swalloed (rat LD 50 2700-5600mg/kg), practically non-toxic if absorbed through skin (rabbit LD50 5000-13000mg/kg) or inhaled(rat 4-hr LC 50 11700 ppm) and moderately irritating to rabbit eyes and skin.

Repeated exposure of humans produced no skin irritation or skin allergy. Central nervous system effects and peripheral neuropathy have been reported in the industrial setting following exposure to mixtures containing this material; however, these mixtures contained other solvents known to cause nervous system injury. Following repeated inhalation exposure, slight changed in organ weights and blood chemistry were reported in rats. No evidence of nervous system injury following long-term inhalation exposure has been observed in rats, chickens, mice, or cats. Animal studies have shown an increased severity of, or shortened onset of, irreversible nervous system effects due to n-hexane and methyl butyl ketone, as well as effects of chloroform and carbon tetrachloride. No increase in the incidence of tumors was observed in long0term skin application studies in mice. A small number of major birth defects were reported in the offspring of rats exposed by inhalation during pregnancy at a level that produced toxic effects in the offspring, but not in the mothers. However, no birth defects were found in a second study with rats using very similar exposure conditions, while adverse effects were noted in the mothers and their offspring. In mice exposed by inhalation during pregnancy, toxic effects were observed in the mothers (mild effects only) and their offspring. Generally, no genetic changes were observed in tests using bacteria, animal cells or animals.

SECTION 12 ECOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Methyl Ethyl Ketone peroxides: This material is slightly toxic to guppies (96-hr LC 50 44.2mg/l) and daphnia (48-hr EC50 39mg/l). It is moderately toxic to algae (72-hr EC50 3.2 mg/l).

2,2,4 Trimethyl-1,3 Pentanediol diisobutyrate: This material is no more than moderately toxic to fathead minnows (96-hr LC50>1.55mg/l), ramshorn snail (96-hr LC 50 1.55 mg/l), aquatic worm (96-hr LC50>1.55mg/l), sideswimmer (96-hr LC50>1.55 mg/l), pill bug (96-hr LC 50>1.55mg/l), flatworm (96-hr LC50>1.55 mg/l), and Daphnia (96-hr LC50>1.46 mg/l)

Hexylene Glycol: This material has been reported to be practically non-toxic to a variety of aquatic organisms. Freshwater fish including rainbow trout, bluegill, sunfish, fathead minnow, mosquito fish, goldfish, and channel catfish had LC 50 values in excess of 1000 mg/l and generally were in the range of 8000-10000 mg/l. Aquatic invertebrates such as Daphnia and crayfish had EC 50 values greater than 2800 mg/l.

Methyl Ethyl Ketone: This material is practically non-toxic to goldfish, brine shimp, Daphnia magna, fathead minnow, mosquito fish, bluegill, sunfish, and golden orfe (LC 50s>1000 mg/l). It inhibits funal growth and is reported to be bacteriostatic to several microorganisms at levels of 10-100 mg/l. Growth inhibition has also been reported for freshwater algae at levels ranging from 120 mg/l (blue-green algae) to 4300 mg/l (green algae)

SECTION 13 TRANSPORTATION INFORMATION

DOT Shipping Name: Organic Peroxide Type D, Liquid (Methyl Ethyl Ketone Peroxide, < 45%)
DOT Hazard Class: 5.2
UN/NA ID No.: UN 3105
DOT Packaging Group: PGII
DOT RQ: RQ

SECTION 14 REGULATORY INFORMATION

The components of this product are either on the TSCA Inventory list or exempt as impurities.

Ingredient Related Regulatory Information

Sara Reportable Quantity	Cercla RQ	Sara TPQ
Hexylene Glycol	NE	
Hydrogen Peroxide	NE	1000 lbs
MEK Peroxides	10 lbs	
2,2,4 Trimethyl-1,3- pentanediol isobutyrate	NE	
Proprietary Ingredient	NE	
Methyl Ethyl Ketone	5000 lbs	

SARA Title III, Section 302
This product does contain chemical(s), as indicated below, currently on the Extremely Hazardous Substance List, Section 302, SARA Title III.

- Hydrogen Peroxide
- DEA-precursor element

This product does contain the following chemical(s), as indicated below, currently on the DEA Final Precursors and Essential Chemicals listed Components List.

- Methyl Ethyl Ketone

Massachusetts Right to Know
This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

- Hexylene Glycol
- Hydrogen Peroxide
- Methy Ethyl Ketone
- Methyl Ethyl Ketone Peroxide(s)

New Jersey Right to Know
This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-To-Know Substances List.

- Hexylene Glycol
- Hydrogen Peroxide
- Methy Ethyl Ketone
- Methyl Ethyl Ketone Peroxide(s)

Pennsylvania Environmental Hazard
This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Environmental Hazard List.

- Hydrogen Peroxide
- Methy Ethyl Ketone
- Methyl Ethyl Ketone Peroxide(s)

Pennsylvania Right to Know
This product does contain the following chemical (s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

- Hexylene Glycol
- Hydrogen Peroxide
- Methy Ethyl Ketone
- Methyl Ethyl Ketone Peroxide(s)