



FIBRE GLAST DEVELOPMENTS CORP.
385 CARR
BROOKVILLE, OH 45309
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TELEPHONE: (937) 833-5200
FAX: (937) 833-6555
**FOR CHEMICAL EMERGENCY
CALL (800) 424-9300 24 HRS.**

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME: PART #69 - MEKP

PRODUCT SYNONYM (S): Luperox DDM-9

CHEMICAL FAMILY: Ketone Peroxide

CHEMICAL FORMULA:

CHEMICAL NAME:

PRODUCT USE: Polymerization initiator

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CASE REGISTRY #	TYPICAL WEIGHT %	OSHA
Methyl Ethyl Ketone Peroxide(s)	1338-23-4	32-34	Y
2,2,4 Trimethyl - 1, 3-pentanediol diisobutyrate	6846-50-0	58.0	Y
Hexylene glycol	107-41-5	6.0	Y
Proprietary ingredient	NJTSN 03365400-5071P	<or= 1% By Wt.	Y
Methyl ethyl ketone	78-93-3	<or= 2% By Wt.	Y
Hydrogen peroxide	7722-84-1	<or= 1% By Wt.	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA 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 Toxic Substances Control Act Inventory list or exempt as impurities.

SECTION 3 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Clear oily liquid, ketone odor

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.

POTENTIAL HEALTH EFFECTS: 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 or repeated contact may cause an allergic skin reaction. Overexposure to vapor may lead to digestive disorders, narcosis and central nervous system (CNS) 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.

SECTION 4 - FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water at least 15 minutes. Get medical attention immediately.

IF ON SKIN, immediately flush the area with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Destroy contaminated shoes.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If breathing is difficult, get medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES

AUTO-IGNITION TEMPERATURE: NE

FLASH POINT: 95 C FLASH POINT METHOD: Seta CC

FLAMMABLE LIMITS: Upper: NE Lower: NE

EXTINGUISHING MEDIA: Use water spray, foam or dry chemical.

FIRE FIGHTING INSTRUCTIONS: Fight fire with large amounts of water from a safe distance. Use water spray to cool containers exposed to fire. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use. After a fire, wait until the material has cooled to room temperature before initiating clean up activities.

FIRE AND EXPLOSION HAZARDS: Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self accelerating decomposition reaction with release of flammable vapors which may auto ignite.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR LEAK: Use inert, non-combustible absorbent materials such as sodium bicarbonate, sodium carbonate, calcium carbonate, clean sand or non-acidic clay directly on the spilled peroxide, then wet down (dampen) the mixture with water. DO NOT USE vermiculite or peat moss. Sweep or scoop up using non-sparking tools and place into a polyethylene bag for disposal. The sweeping should be wetted down further with water. Dispose of immediately. After all of the material has been collected, wash down the area with detergent and water. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

SECTION 7 - HANDLING & STORAGE

HANDLING: Contact with incompatible materials or exposure to temperatures exceeding SADT (See Section (9) may result in a self accelerating decomposition reaction with release of flammable vapors which may auto ignite. Keep away from heat sparks and flame. Avoid contamination. Use explosion proof equipment. Do not get in eyes, on skin or on clothing. Do not taste or swallow. Avoid breathing vapor or mist. Avoid prolonged or repeated contact with skin. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Do not reuse container as it may retain hazardous product residue.

STORAGE: Store below 38°C/100°F to maintain stability and active oxygen content. Detached storage is preferred. Store out of direct sunlight in a cool well-ventilated

place. Store away from combustibles and incompatible materials. Refer also to National Fire Protection Agency (NFPA) Code 432, Code for the Storage of Organic Peroxide Formulations.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Investigate engineering techniques to reduce exposures below air borne limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

EYE/FACE PROTECTION: Where there is potential for eye contact, wear face shield, chemical goggles, and have eye flushing equipment immediately available.

SKIN PROTECTION: Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing promptly and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash skin thoroughly after handling.

RESPIRATORY PROTECTION: Avoid breathing vapors or mists. Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full face piece equipment is recommended and if used, replaces need for face shield and/or chemical goggles. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

AIRBORNE EXPOSURE GUIDELINES FOR INGREDIENTS:

EXPOSURE LIMIT	VALUE
Hexylene Glycol	
ACGIH CEILING	25 ppm (121 mg/m ³)
Hydrogen peroxide	
ACGIH TWA	1 ppm 1.4 mg/m ³
OSHA TWA PEL	1 ppm 1.4 mg/m ³
Methyl Ethyl Ketone	
ACGIH STEL	300 ppm (885 mg/m ³)
OSHA TWA PEL	200 ppm (590 mg/m ³)

ACGIH TWA 200 ppm (590 mg/m3)

Methyl Ethyl Ketone Peroxide(s)

ACGIH CEILING 0.2 ppm (1.5 mg/m3)

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

-WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

SECTION 9 - PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Clear oily liquid, Ketone odor

pH: Not applicable

SPECIFIC GRAVITY: 1.0088 @ 20C

VAPOR PRESSURE: 5.2 torr @ 19C

VAPOR DENSITY: NE

MELTING POINT: NE

FREEZING POINT: NE

BOILING POINT: NE

SOLUBILITY IN WATER: Slight

VISCOSITY: 17.30 cps @ 20C

SADT: 75°C/169° F (45 lb ctn.)

This material is chemically unstable and should only be handled under specified conditions. See HANDLING AND STORAGE section of this MSDS for specified conditions.

SADT - Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self accelerating decomposition reaction. This

reaction will generate flammable vapors which may auto ignite. The length of time to generate a decomposition reaction, after the SADT has been reached or exceeded, is dependent upon how much the SADT has been exceeded and the length of time needed for the reaction exotherm (heat spike from increasing decomposition rate) to initiate a rapid decomposition reaction. Typically, SADT is inversely proportional to package size. Larger packages will have a lower SADT due to a smaller ratio of heat transfer area to volume of product.

OTHER PHYSICAL DATA

ACTIVE OXYGEN CONTENT = 8.7 – 9.0 %

REFRACTIVE INDEX = 1.4356

SECTION 10 - STABILITY & REACTIVITY

STABILITY

This material is chemically unstable and should only be handled under specified conditions. See HANDLING AND STORAGE section of this MSDS for specified conditions.

HAZARDOUS POLYMERIZATION

Does not occur.

INCOMPATIBILITY

Contact with strong acids, alkalis, oxidizers, transition metal salts, promoters/accelerators & reducing agents may result in a violent decomposition reaction or product degradation. (See SECTION 16)

HAZARDOUS DECOMPOSITION PRODUCTS

Temperatures at or above the SADT can result in the release of hazardous decomposition products which are flammable and may auto ignite.

SECTION 11 - TOXICOLOGICAL INFORMATION

Toxicological Information

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

Methyl ethyl ketone peroxide(s)

Single exposure (acute) studies indicate that this material is moderately toxic if swallowed (rat LD50 484 mg/kg), slightly toxic if absorbed through the skin (rabbit LD50 4,000 mg/kg), practically non-toxic if inhaled (rats 4-hr LC50 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 the paint. However, subsequent patch testing did not produce allergic skin reactions in 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 and mice, 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 test using animals.

2.2.4-Trimethyl-1,3-Pentanediol Diisobutyrate

Single exposure (acute) studies indicate that this material is no more than slightly toxic if swallowed (rat LD50>3200 mg/kg), practically non-toxic if absorbed through the skin (guinea pig LD50>20ml/kg) or if inhaled (rat 6-hr LC50> 5.3 mg/l), and slightly irritating to rabbits eyes and to guinea pig skin.

No skin allergy was observed in guinea pigs following repeated exposure. 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 fed 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 LD50 2,800-4,700 mg/kg), practically non-toxic if absorbed through skin (rabbit LD50 12,300-13,200 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. Skin 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 material toxicity. No genetic changes were observed in tests using bacteria or animals cells.

Methyl Ethyl Ketone

Single exposure (acute) studies indicate that this material is no more than slightly toxic if swallowed (rat LD50 2700-5600 mg/kg), practically non-toxic if absorbed through the skin (rabbit LD50, 5000-13000 mg/kg) or if inhaled (rat 4-hr LC50 11,700ppm), and moderately irritating to rabbit eyes and skin.

Repeated exposure of humans produced no skin irritation or skin allergy. Central nervous system (CNS) effects and peripheral neuropathy have been reported in the industrial setting following exposures to mixtures containing this material; however these mixtures contained other solvents known to cause nervous system injury. Following repeated inhalation exposure, slight changes 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 increase the severity of, or shorten the 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 long-term 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 no 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 in were observed in tests using bacteria, animal cells or animals.

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

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

Methyl Ethyl Ketone Peroxide(s)

This material is slightly toxic to guppies (96-hr LC50 44.2 mg/l) and daphnia (48-hr EC50 39 mg/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 minnow (96-hr LC50>1.55 mg/l), ramshorn snail (96-hr LC50>1.55 mg/l), aquatic earthworm (96-hr LC50>1.55 mg/l), sideswimmer (96-hr LC50>1.55 mg/l), pill bug (96-hr LC50>1.55 mg/l), flatworm (96-hr LC50>1.55 mg/l), and Daphnia (96-hr EC50>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 LC50 values in excess of 1,000 mg/l and generally were in the range of 8,000 to 10,000 mg/l. Aquatic invertebrates such as Daphnia and crayfish had EC50 values greater than 2,800 mg/l.

Methyl Ethyl Ketone

This material is practically non-toxic to goldfish, brine shrimp, Daphnia magna, fathead minnow, mosquito fish, bluegill sunfish and golden orfe (LC50s>1,000 mg/l). It inhibits fungal 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 4,300 mg/l (green algae).

CHEMICAL FATE INFORMATION

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

Methyl Ethyl Ketone Peroxide(s)

This material is readily biodegradable (87% after 28-days) and not bioaccumulable (log Pow – 0.43). The 30-min EC50 in activated sludge is 16 mg/l.

2,2,4-Trimethyl-1, 3-Pentanediol Diisobutyrate

In a 28-day modified Sturm Test, this material was found to undergo 32-59% degradation to CO₂. The bioconcentration factor without metabolism was estimated to be 670 and with metabolism 1-40. The log Pow is estimated to be 4.1

Hexylene Glycol

This material is biodegradable (35-76% after 28-days). The log Pow is -0.14.

Methyl Ethyl Ketone

This material is readily biodegradable (89% after 20-days). It is practically not bioaccumulable (log Pow 0.29) and is slightly adsorbed in soils and sediments (log K_{oc} 0.71). This material is rapidly degraded by OH radicals in air (half-life 6.9 days) and has an evaporation half-life of 27.1-hours. It is non-toxic to sludge microorganisms at concentrations up to 800 ug/l.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL

Dispose in accordance with federal, state and local regulations. Dilution followed by incineration is the preferred method. Dilution ratio of 10:1 in a clean, compatible, combustible solvent (i.e. Fuel Oil #2, mineral oil) will reduce reactivity hazard during incineration and transportation.

SECTION 14 - TRANSPORT INFORMATION

DOT NAME: Organic Peroxide Type D, Liquid

DOT TECHNICAL SHIPPING NAME: Methyl Ethyl Ketone Peroxide(s), <=45%

DOT HAZARD CLASS: 5.2

UN NUMBER: UN 3105

PACKING GROUP: PG II

RQ: Methyl Ethyl Ketone Peroxide(s) = 10 lbs

SECTION 15 - REGULATORY INFORMATION

HAZARD CATEGORIES UNDER CRITERIA OF SARA TITLE III RULES (40 CFR PART 370)

Immediate (Acute) Health:	yes
Delayed (Chronic) Health:	no
Sudden Release of Pressure:	no
Reactive:	yes
Fire:	no

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

INGREDIENT RELATED REGULATORY INFORMATION

<u>SARA Reportable Quantities</u>	<u>CERCLA</u>	<u>RQ</u>	<u>SARA</u>	<u>TPO</u>
Hexylene glycol	NE			
Hydrogen peroxide	NE		1000 LBS	
Methyl ethyl ketone	5000 lbs			
Methyl ethyl ketone peroxide(s)	10 lbs			
2,2,4-Trimethyl-1,3-pentanediol diisobutylrate	NE			
Proprietary ingredient	NE			

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. See Section 2 for further details regarding concentrations and registry numbers.

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
- Methyl 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 Substance List.

- Hexylene glycol
- Hydrogen peroxide
- Methyl 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
- Methyl 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
- Methyl ethyl ketone
- Methyl ethyl ketone peroxide(s)

SECTION 16 – OTHER INFORMATION

Miscellaneous**Additional Incompatibility Data:**

Rust, copper, and brass are not compatible with MEK peroxide. 316 stainless steel, glass, polyethylene, polytetrafluoroethylene and polypropylen are preferred materials for contact with MEK peroxides. Acetone may react with residual hydrogen peroxide to form insoluble shock-sensitive acetone peroxide crystals.

The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with Fibre Glast Developments Corporation or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.