

## Section 1 – Chemical Product and Company Identification

MSDS Name: Ethylmagnesium bromide in Tetrahydrofuran

Chemical Family: Grignard Reagent

Use of the substance: For Industrial use

Company: Optima Chemicals Group, LLC  
200 Willacoochee Hwy.  
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## Section 2 – Hazards Identification

Hazards:

Danger! Water-reactive, light sensitive. May be harmful if swallowed. May cause central nervous system depression. May be absorbed through intact skin. May form explosive peroxides. May cause lung, liver or kidney damage. Will cause burns by all exposure routes. Reacts violently and /or explosively with water, steam or moisture. Extremely flammable liquid and vapor. Vapor may cause flash fire.

NFPA Rating: Special: W

Precautionary Statements:

Keep from any possible contact with water, due to violent reaction.

Handle under inert gas, protect from moisture.

Wear chemical splash goggles with a face shield, rubber gloves and rubber clothing.

Keep away from heat/sparks/open flame – No smoking.

Keep Container tightly closed.

Ground/bound container and receiving equipment.

Use explosion-proof electrical, ventilation and lighting equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Wash thoroughly after handling.

Avoid breathing vapors.

Use only in Chemical Fume hood

Use only outdoors or in well-ventilated area. In case of fire, use dry chemical for extinction. Do not use water or carbon dioxide.

### Section 3 – Composition, Information on Ingredients

<u>CAS #</u>	<u>EC#</u>	<u>Chemical Name</u>	<u>Wt.%</u>
925-90-6	213-127-3	Ethylmagnesium bromide	13
109-99-9	203-726-8	Tetrahydrofuran	87

### Section 4 – First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, lifting upper and lower lids. Seek medical attention.

Skin: If material gets into broken skin, DO NOT USE WATER, the area should be covered with a light oil. If contact with skin surface immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and/or shoes. Seek immediate medical attention.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. If victim is conscience give them a cup of water. Seek medical attention.

Inhalation: Remove from exposure, to fresh air immediately. If breathing discomfort occurs and persists seek medical attention. If not breathing, **DO NOT GIVE MOUTH TO MOUTH RESUSITATION**, give artificial respiration with the aid of a pocket mask equipped with a one way valve, and seek medical attention.

Notes to Medical Doctor: Treatment is controlled removal of exposure followed by symptomatic and supportive care. Persons with skin conditions, liver, kiney, lung or blood disease, may be at increased risk from exposure to this product.

### Section 5 – Fire Fighting Measures

Flammable Limits: Upper: Not available Lower: Not available

General Hazard: Highly flammable liquid. Reacts violently with water to give off flammable gases, May form explosive peroxides, may cause serious burns through all exposure routes.

Properties contributing to flammability: Violent reaction with Water.

Fire Extinguishing Agents Recommended: Do Not Use Water or Carbon Dioxide. Use dry chemical. Contact Fire department immediately.

Hazardous Decomposition Products: Ammonia, Oxides of magnesium, carbon dioxide, carbon monoxide, Hydrogen Chloride, Chlorine,

Special Fire fighting Procedures: Wear self-contained breathing apparatus and protective clothing (approved for firefighting) to prevent contact with skin and eyes. Do not breathe smoke, gases or vapors generated.

Autoignition temperature: Not available.

Flashpoint: -5° C

Sensitivity to Static Discharge: Yes

Sensitivity to Impact: Not available

### **Section 6 – Accidental Release Measures**

Remove all sources of ignition. Do not use water in clean up. Contain spill with inert material. Transfer to approved transport container and clean up spillage with an absorbent. Avoid run off in storm sewers and ditches that lead to waterways. Isolate the area and deny entry. Dispose of waste according to local and Federal laws and regulations. Before cleanup measures begin, review the entire MSDS with particular attention to Section 3, and Section 8.

### **Section 7 - Handling and Storage**

Handling: Do not allow to come in contact with water or for water to enter container due to violent reaction. Keep away from heat, sparks, and flame and do not ingest or inhale. Do not get in eyes, on skin or clothing. Only use in chemical fume hood, if peroxide formation is suspected do not move or open container.

Storage: keep away from sources of ignition. Do not store in direct sunlight. Store In a tightly closed container in a dry area. Store under nitrogen and at room temperature. Container should be dated if open and tested for peroxides periodically. If crystals form, peroxidation may have occurred and product should be considered extremely dangerous. The container should only be opened remotely by professionals.

### **Section 8 – Exposure Controls, Personal Protection**

Exposure Limits (tetrahydrofuran): PEL (OSHA) – 200 ppm, TWA (ACGIH) – 50 ppm, STEL/Ceiling (ACGIH) – 100ppm.

Engineering Controls: Use explosion proof ventilation equipment. Must be equipped with eyewash facility and shower. Use only under chemical fume hood.

Eyes and Face: Wear chemical splash goggles with a face shield.

Skin: Wear rubber gloves and rubber protective clothing.

Respiratory: When engineering controls are not adequate, wear a NIOSH/MSHA respirator approved for protection against organic vapors and mists.

Work Hygienic Practices: Quick-drench eyewash and safety shower.

### **Section 9 – Physical and Chemical Properties**

Appearance and Odor: Brownish, gray liquid. Pungent odor..

Melting Point: Not Available

Odor Threshold: Not available

Flammability: Highly flammable.

Flash Point: -5° C

Boiling Point: Not available

Vapor Pressure: Not available

Percent Volatile: 75-85

Vapor Density: Not available

Specific Gravity: 1.020

Water Solubility: Vigorous reaction

Evaporation Rate: Not available

Flammable Limits: Not available

Molecular Weight: 133.27

Autoignition Temperature: Not available

Viscosity: Not available

Decomposition Temperature: Not available

Explosive Properties: Not applicable

Oxidizing Properties Not available

pH: Not applicable

### **Section 10 – Stability and Reactivity**

Stability: May form explosive peroxides, Reacts violently with water and sensitive to light.

Incompatibility: Heat, sparks, open flame, oxygen, water, alcohols, acids and oxidizers, oxygen, bromine, metal halides, lithium tetrahydroaluminate, borane, sodium tetrahydroaluminate, caustic alkalis.

Hazardous Polymerization: Has not been reported

Conditions to Avoid: Water, heat, sparks, open flame, air, evaporation near dryness, confined spaces, direct sunlight.

## Section 11 – Toxicological Information

Eyes: No data available for the product.

Skin: No data available for the product.

Ingestion: No data available for the product. THF: LD50 = 1650 mg/kg (rat)

Inhalation: No data available for the product. THF: LC50 = 21,000 ppm, 3 hr. (rat)

Acute Effects from Overexposure: This product will cause severe burns to skin, eyes, mucous membranes, and upper respiratory tract. Inhalation of tetrahydrofuran vapors can cause dizziness, nausea, anesthesia, numbness, motor weakness in fingers and toes, incoordination, and headache.

Chronic Effects from Overexposure: Prolonged exposure to eyes may cause conjunctivitis, to the skin may cause dermatitis. May cause liver, kidney and/or lung damage.

Tetrahydrofuran: Repeated or prolonged exposure may cause signs of central nervous system depression and respiratory irritation.

Sensitization: No data available

Carcinogenicity: Not listed by IARC, OSHA, or EH40. THF is listed as a substance that is reasonably anticipated to be a carcinogen by the NTP. ACGIH lists THF as Category 3A confirmed animal carcinogen with unknown relevance to humans.

Mutagenicity: No data available for the product. THF: Negative results in bacterial mutagenicity tests with and without metabolic activation.

Reproductive Toxicity: No data available for the product. THF: One animal study suggests that THF does not cause effects at doses which are not maternally toxic.

## Section 12 – Ecological Information

Ecotoxicological Information:

Environmental toxicity testing of the product has not been conducted.

THF: 96 hr. LC50 = 2160 mg/l (fathead minnow) [Handbook of Env. Data on Org. Chem., 4<sup>th</sup> Ed 2001]. 48 hr LC50 = 2820; 2930 mg/l (orfe) ) [Handbook of Env. Data on Org. Chem., 4<sup>th</sup> Ed 2001]

THF is expected to volatilize from both water and soil and leach into groundwater. It will not photodegrade or adsorb to sediment. Limited evidence suggests it may biodegrade. Based on a relatively low Kow (0.47), it is not expected to bioconcentrate.

### **Section 13 – Disposal Considerations**

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

### **Section 14 – Transport Information**

Shipping Name: Compound Dispersion, Water Reactive, Flammable,  
N.O.S.(ethylmagnesium bromide), 4.3, (3), UN3207, PG I

Labels: Water Reactive, Flammable.

### **Section 15 – Regulatory Information**

United States:

Section 311 Hazard Category (40CFR 370): immediate (acute), fire hazard, health hazard.

Section 313 Reportable Ingredients (40 CFR 372): No reporting requirements.

Section 302 Extremely Hazardous Substances (40 CFR 355): Not listed.

CERCLA Hazardous Substance (40 CFR 302.4): Tetrahydrofuran has a reportable quantity of 1000 pounds.

TSCA Sec 12B Export Notification: Tetrahydrofuran is subject to these requirements.

TSCA Inventory Status (40 CFR 710): CAS # 109-99-9 is listed, CAS # 925-90-6 is listed.

Canada:

CAS # 109-99-9 and CAS # 925-90-6 are listed on DSL list

### **Section 16 – Additional Information**

Creation Date: 03/29/2010

This MSDS has been prepared to meet U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

This information is believed to be accurate and represents the best information currently available to Optima Chemical Group LLC. However, we make no warranty of merchantability, express or implied, with respect to such information and assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

