

Section 1 – Chemical Product and Company Identification

MSDS Name: Tert-butylmagnesium Chloride in DEE

Chemical Family: Grignard Reagent

Molecular Formula: C₄H₉MgCl

Use of the substance: For research and process development.

Company: Optima Chemicals Group, LLC
200 Willacoochee Hwy.
Douglas, Georgia 31535
Telephone (912) 384-5101 FAX (912) 384-6330
Emergencies: Telephone (912) 384-5101

Section 2 – Hazards Identification

Hazards:

Danger! Harmful if swallowed. May form explosive peroxides. May cause burns by all exposure routes. Liquid and vapors are extremely flammable. Vapor may cause flash fire. Breathing vapors may cause drowsiness or dizziness. Substance reacts violently with water liberating highly flammable gases. Repeated exposure may cause drying and cracking of skin. Target Organs: Central Nervous system, respiratory system, gastrointestinal system, eyes and skin.

NFPA Rating : Special W

Section 3 – Composition, Information on Ingredients

| <u>CAS #</u> | <u>Chemical Name</u> | <u>Wt.%</u> |
|--------------|------------------------------|-------------|
| 60-29-7 | Ethyl ether | 81-76 |
| 677-22-5 | Tert-butylmagnesium chloride | 19-24 |

Section 4 – First Aid Measures

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

Skin: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and or shoes. Thoroughly wash with soap and water, and seek medical attention immediately.

Ingestion: If conscience and alert, rinse mouth and drink 2- 4 glasses of milk or water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention immediately.

Inhalation: Remove from exposure, to fresh air immediately. If breathing is difficult, give oxygen. DO NOT use mouth to mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one way valve or other proper respiratory medical device.

Notes to Medical Doctor: Treatment is systematic and supportive.

Section 5 – Fire Fighting Measures

Flammable Limits: Upper: Not available Lower: Not available

Fire Extinguishing Agents Recommended: Use class D extinguishing agent or smother with dry sand, clay or sodium bicarbonate. DO NOT USE WATER OR FOAM.

Hazardous Combustion Products: Carbon dioxide, carbon monoxide, peroxides, chloride fumes, oxides of magnesium, hydrogen chloride.

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

Autoignition temperature: Not available.

Flashpoint: Not available

Sensitivity to Static Discharge: Not available

Section 6 – Accidental Release Measures

Remove all sources of ignition. Absorb spill with inert material(vermiculite, sand or earth) and Transfer to approved transport container. Wear self contained breathing apparatus and personal protective equipment. Remove all sources of ignition. Use spark -proof tools. Do not expose chemical to water. Do not release into environment. 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 WATER INTO CONTAINER DUE TO VIOLENT REACTION. Do not get in eyes, on skin or clothing. Wash thoroughly after handling. Do not ingest or inhale. Use only in a chemical fume hood.

Storage: keep away from sources of ignition. Do not store in direct sunlight. Store in a tightly closed container. Store in a dry, water free area. Store under nitrogen. Store at room temperature.

Section 8 – Exposure Controls, Personal Protection

Exposure Limits: Ethyl Ether- PEL (OSHA) –400 ppm, TWA (ACGIH) – 1200mg/m³, STEL/Ceiling (OSHA) – None.

Engineering Controls: Use explosion proof ventilation equipment. Facilities storing or using this material should be equipped with an eyewash station and safety shower. Use only under a chemical fume hood.

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

Skin: Chemical resistant gloves and clothing.

Respiratory: When engineering controls are not adequate, wear a NIOSH/MSHA approved respirator

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

Section 9 – Physical and Chemical Properties

Appearance and Odor: gray, brown-light brown, pungent odor

Melting Point: Not available

Boiling Point: Not available

Flash Point: Not available

Vapor Pressure: Not available

Vapor Density: Not available

pH: Not available

Specific Gravity: 0.800

Percent Volatile: Not available

Water Solubility: Vigorous reaction

Evaporation Rate: Not available

Flammable Limits: Not available

Molecular Weight: 116.87

Autoignition Temperature: Not available

Viscosity: Not available

Decomposition Temperature: Not available Explosive Properties: Not available

Oxidizing Properties: Not available

Section 10 – Stability and Reactivity

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

Incompatibility: acidic conditions, oxidizing agents, acids, bases, alcohols, nitric acid and water.

Hazardous Polymerization: Has not been reported

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, hydrogen chloride, peroxides, chloride fumes, oxides of magnesium.

Conditions to Avoid: incompatible material, ignition sources, exposure to air, excess heat, exposure to moisture or water, direct sunlight.

Section 11 – Toxicological Information

Carcinogenicity: Not listed by NTP, OSHA, EH40. IARC, or ACGIH.

Mutagenicity: No data available.

Reproductive Toxicity: No data available.

Section 12 – Ecological Information

Ecotoxicological Information: Fish: fathead minnow: LC50=2600mg/l; 96 hr, flow-through bioassay. Fish: Bluegill/Sunfish:LC50>10000 mg/l; 96 hr static bioassay. Bacteria: Phytobacterium phosphorium: EC50= 5625 mg/l: 15 minute: microtox test.

Chemical Fate Information: No data available.

Section 13 – Disposal Considerations

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

Section 14 – Transport Information

DOT Shipping Name: Organometallic substance, liquid, water-reactive, flammable, n.o.s., (Tert-butylmagnesium Chloride in Diethyl ether), 4.3, (3), UN3399, PG I

Classification: Dangerous When Wet, Flammable

Labels: Dangerous When Wet, (Flammable)

Marine Pollutant: No

Custom Tariff Number: 2942.00.0000

USA RQ: CAS # 60-29-7: 100 lb final and 45.4 kg

Section 15 – Regulatory Information

United States:

TSCA Inventory Status (40 CFR 710): CAS # 60-29-7 is listed

Canada:

WHMIS: Hazard Classification – UN 1155, Class 3, PG I, Ingredient Disclosure List: CAS # 60-29-7 is listed.

Section 16 – Additional Information

Creation Date: 03/29/10

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.