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### Section I. Identification of Product.

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Substance: n-Butylmagnesium chloride in dibutyl ether

Chemical Family: Grignard reagent

DOT Hazard Classification: Organometallic substance, liquid, water-reactive, flammable (butylmagnesium chloride, dibutyl ether, solution), Dangerous when wet, 4.3 (3, Flammable liquid), UN3399, PG 1.

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### Section II. Hazardous Ingredients.

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Name	CAS Number	%	OSHA-PEL
n-Butylmagnesium chloride	693-04-9	10-30	NA
Dibutyl ether	142-96-1	70-90	NA

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### Section III. Physical Data and Characteristics.

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Appearance and Odor: Brownish/Grey liquid, with slight sweet odor.

Melting Point: - 95 degrees C  
(dibutyl ether)

Boiling Point: 142 degrees C  
(dibutyl ether)

Specific Gravity : NA

Flash Point: 15 degrees C

Solubility in Water: Exothermic reaction

Vapor Density: 4.48 (dibutyl ether)

Flammable Limits: Upper – 7.6 vol %  
Lower - 1.5 vol %

Autoignition Temp: 185 degrees C

Molecular Weight: 116.87

Molecular Formula: C<sub>4</sub>H<sub>9</sub>MgCl

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### Section IV. Fire and Explosion Data.

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Fire Extinguishing Agents Recommended: Do Not Use Water or CO<sub>2</sub>, use dry chemical.

Fire Fighting Procedures: As in any fire, wear a self-contained breathing apparatus in pressure-demand, and full protective gear.

Sensitivity to Static Discharge: Yes

Sensitivity to Impact: No

Flammable limits: Upper: 7.6% Lower: 1.5%

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#### Section V. Health Hazard Data and First Aid Measures.

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Immediate Concerns: Flammable liquid. Water reactive. Can catch fire on contact with body moisture or if exposed to humid air.

Inhalation: Highly Irritating to the respiratory tract. Avoid inhalation of vapor. Exposure to high concentrations can induce burns to the mucous membranes and toxicity. May cause dizziness, nausea, anesthesia, incoordination, and headache. Remove from exposure area to fresh air immediately, and administer oxygen. Seek medical attention.

Ingestion: May burn the throat and stomach. Rinse mouth with water, and do not induce vomiting. Seek medical attention.

Skin: May produce burns to skin. Wash with soap and water, and remove contaminated clothing.

Eyes: Will produce burns to eyes. Flush with water for at least 15 minutes occasionally lifting the upper and lower lids, and get medical attention.

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#### Section VI. Reactivity Data.

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Conditions to Avoid: Water, heat, sparks, open flame, and air.

Stability: Stable at room temperature.

Incompatibility: Water, acids, alcohols, oxidizers, oxygen, open flame, and CO<sub>2</sub>.

Hazardous Decomposition Products: None.

Hazardous Polymerization: None.

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#### Section VII. Environmental.

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Spills: Clean up spills immediately, observing precautions in the protective equipment section. Contain spill, and absorb with inert material, then sweep up and place into a suitable container for disposal.

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

Mutagenicity: No data available.

Reproductive Toxicity: No data available.

SARA Title III Reporting Requirements:

Section 311/312 Inventory Reporting Hazardous Categories: Acute, flammable, reactive.

Section 313 Release Reporting: Reporting not required.

Reportable Quantity: None

Hazardous Air Pollutant: No

NFPA: Health – 3, Flammability – 3, Reactivity – 2, Special – Water reactive.

TSCA Inventory Status: Listed, This product is not subject to 12(b) export notification requirements.

Disposal of this material should be in a manner consistent with federal, state, and local regulations.

Toxicological Information: Dermal LD50 = 10mL/kg Rabbit, Oral LD50 = 7400 gm/kg Rat, Inhalation LC50 = 169 gm/m<sup>3</sup>/15M Mouse. (RTECS 2006). All toxicological information is based upon dibutyl ether, since no data is available for the product.

Ecological Information: No testing has been done for the product. Dibutyl ether is: EC50 > 150 mg/l (daphnia magna), 96h LC50 = 52 mg/l (fathead minnow).

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#### Section VIII. Special Protective Information.

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Respiratory Protection: Wear a NIOSH/MSHA approved (or equivalent) full-facepiece respirator for potential minor exposures. Wear a self contained breathing apparatus for more major exposures.

Eyes and Face: Chemical safety goggles and faceshield.

Hands, Arms, and Body: Wear appropriate protective gloves and clothing to minimize skin exposure.

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Section IX. Special Precautions.

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Handling: Use in a closed system under argon or nitrogen. Do not get in eyes, on skin or clothing. Do not breathe vapors or mist.

Storage: Store in a cool place. Keep container closed. Keep away from water, sources of ignition, air, acids and oxidizing agents.

Observe all Federal, State and local regulations when storing, processing, or otherwise using this product.

Other Information: NA

Preparation Date: 1/22//07 Revised: 7/29/09

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