1SECTION 1 ..................... IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY ...........................................

1.1 Product Identifier
Name: Boron Trifluoride, 14% in Methanol

1.2 Use of Substance/Mixture
Use: Analytical Reagent

1.3 Details of Manufacturer/Supplier
Company: Regis Technologies, Inc.
Address: 8210 N. Austin Avenue
Morton Grove, IL 60053
Phone: 847-967-6000; 800-323-8144 (toll free)
Email: cservice@registech.com
Website: www.registech.com

1.4 Emergency Telephone
INFOTRAC 800-535-5053 [U.S.A.]

SECTION 2 ........................................... HAZARDS IDENTIFICATION ..................................................................................

2.1 Classification of the Substance or Mixture
GHS Classification
Flammable Liquid Category 2
Physical Hazards
Health Hazards
Acute toxicity (oral) Category 3
Acute toxicity (dermal) Category 3
Acute toxicity (inhalation) Category 3
Skin Corrosion / Irritation Category 1B
Serious Eye Damage / Irritation Category 1
Specific Target Organ Toxicity – Single Exposure, organ damage (eyes) Category 1

GHS Label Elements
Pictograms or hazard symbols

Signal Word: Danger
Hazard Statement
H225 – Highly flammable liquid and vapor.
H314 – Causes severe skin burns and eye damage.
H318 – Causes serious eye damage.
H301 + H311 + H331 – Toxic if swallowed, inhaled, or in contact with skin. Readily absorbs through skin.
H370 – Causes damage to organs (optic nerve, central nervous system).

Precautionary Statements
P261 – Avoid breathing gas/mist/vapours/spray.
P264 – Wash thoroughly after handling.
Name: Boron Trifluoride, 14% in Methanol

 sectional 3: COMPOSITION / INFORMATION ON INGREDIENTS

Name: Boron Trifluoride, 14% in Methanol
Synonym(s): Boron trifluoride methanol solution

<table>
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<th>Hazardous components</th>
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</tr>
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<td>Molecular Mass</td>
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<td>Boron Trifluoride</td>
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<td>CAS No.</td>
</tr>
<tr>
<td>EC No.</td>
</tr>
<tr>
<td>Formula</td>
</tr>
<tr>
<td>Molecular Mass</td>
</tr>
</tbody>
</table>

For full test of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Eye contact: Rinse eyes with plenty of water for at least 15 minutes; lift eyelids occasionally. If irritation persists, consult physician.

Skin contact: Immediately remove contaminated clothing and shoes, then wash skin with soap and plenty of water. If irritation persists, consult physician.

Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and keep person warm and at rest. Consult physician.

Ingestion: Avoid vomiting. Consult physician immediately.

Physician note: Symptomatic and supportive care.

4.2 Most important symptoms and effects, both acute and delayed.

Burns to the skin, eyes, respiratory tract, and mucous membranes possible. Blindness or impairment of vision possible. See Section 2 and Section 11 for further details.

4.3 Indication of immediate medical attention and special treatment needed.

No data available.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable Extinguishing Media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Some abbreviations used throughout this MSDS: NA=No data available; NE=not established; U=unknown/unavailable; NL=not listed; N=no; Y=yes.
5.2 Specific hazards arising from the chemical.
Highly flammable and corrosive liquid and vapor.
Vapors are heavier than air. Flash back possible over considerable distance.
Emits toxic fumes under fire conditions: carbon oxides, hydrogen fluoride, borane/boron oxides
Decomposition: BF3 vapor reacts rapidly with water in the air to form BF3 hydrates. Reaction with excess water forms
fluoroboric acid (a strong acid), boric acid and hydroxy fluoroboric acids.

5.3 Advice for fire-fighters
Wear personal protective equipment for flammable, corrosive organic/acid gas/vapor/mists conditions. Wear self-contained
breathing apparatus (SCBA), if necessary.

SECTION 6 ........................................................ ACCIDENTAL RELEASE MEASURES.................................................................

6.1 Personal precautions, protective equipment, and emergency procedures
For non-emergency personnel - Do not breath vapors. Avoid material contact. Evacuate unnecessary personnel from area,
observe emergency procedures, consult an expert.

For emergency responders – Protective equipment for flammable, corrosive organic/acid gas/vapor/mists conditions. See
Section 8.3.

6.2 Environmental precautions
Prevent material from entering drains.

6.3 Methods of clean up
Evacuate unnecessary people from area. Isolate spilled material.
Ventilate area. Eliminate all ignition sources. Use spark proof tools.
Neutralize with sodium bicarbonate or other suitable neutralizing agent.
If neat or in solution, mix with sand or similar inert adsorbent material or spill pillow.
Sweep up, seal in appropriate hazardous waste container, and hold for proper waste disposal.
Keep out of water supplies and sewers. Wash spill site after material pickup is complete.

SECTION 7 ............................................................... HANDLING AND STORAGE........................................................................

7.1 Safe Handling Precautions
Wear suitable protective equipment to avoid contact with skin, eyes, or inhalation of vapors.
Take appropriate precautions for handling flammable and corrosive liquids.
Handle in a dry, well ventilated area. Use local exhaust if vapor can be generated.
Ground and bond containers or use inert gas purge when transferring or handling material.
Use spark proof tools and explosion proof equipment.
Empty containers retain product residue, (liquid/vapor), and can be dangerous.
Readily absorbed through skin. Wash thoroughly after handling. Immediately remove contaminated clothing.
See Section 8 Below.

7.2 Storage Conditions
Store under inert gas, in a tightly sealed container. Store in a cool, dry, well ventilated place and store in a place for flammable
and corrosive liquids, away from incompatible materials (See Section 10.).
Suggested Storage Conditions: 2-8°C.

SECTION 8 ............................................... EXPOSURE CONTROLS / PERSONAL PROTECTION.................................................................

8.1 Control parameters
Exposure limits:
Boron Trifluoride in Methanol Solution – No data available.
Methanol (67-56-1)
OSHA – PEL 200 ppm (260 mg/m³) TWA
STEL 250 ppm (325 mg/m³)

Some abbreviations used throughout this MSDS: NA=No data available; NE=not established; U=unknown/unavailable; NL=not listed; N=no; Y=yes.
Name: Boron Trifluoride, 14% in Methanol

SAFETY DATA SHEET

ACGIH – TLV 200 ppm (260 mg/m³) TWA
STEL 250 ppm (325 mg/m³)

Boron trifluoride (7637-07-)
OSHA – PEL 1 ppm (3 mg/m³) TWA (Ceiling Limit)
ACGIH – TLV 3 ppm (2 mg/m³) TWA
STEL 6 ppm (16.64 mg/m³)

Environmental
Do not empty into drains.

8.2 Appropriate engineering controls
Safety shower and eye wash
Local exhaust and mechanical ventilation required. Hood recommended. Fume scrubber.

8.3 Personal protection
Eye/Face
Chemical safety eyewear or goggles

Hand
Compatible chemical-resistant gloves: Rubber (e.g., natural rubber, neoprene, nitrile, or equivalent), Silver Shield®, Viton®

Respiratory
NIOSH/MSHA or European Standard approved respirator for organic vapor/mists, if exposure limits are exceeded or irritation or other symptoms are experienced.

Dermal (not hand)
Protective Clothing (e.g., lab coat)—flame retardant anti-static material recommended.

Hygiene
Avoid inhalation, ingestion; contact with eyes, skin, and clothing; and prolonged or repeated exposure. Wash thoroughly after handling. Wash contaminated clothing before reuse. Discard contaminated footwear.

SECTION 9 ................................................... PHYSICAL AND CHEMICAL PROPERTIES .................................................................

9.1 Information on physical and chemical data

Form liquid
Appearance clear, colorless
Odor pungent
Odor threshold No data available
pH No data available
Melting/freezing point -97.8°C (-144°F) (methanol)
Initial boiling point: 64.7°C (148°F) at 1.013 hPa (methanol)

Flammability (liquid, solid)
Flash Point 52°C (111°F) Method: closed cup
Flammable limits (%v/v) UEL (upper explosive limit) 36.5%
LEL (lower explosive limit) 5.5%

Autoignition temperature 384°C (725°F) (methanol)
Decomposition temperature No data available

OSHA Flammability Class IB

Evaporation Rate (ether = 1.0) No data available
Vapor pressure (mmHg) 128 hPa at 20°C (68°F) (methanol)
Vapor density (air=1): No data available
Relative density 0.930 at 25°C (77°F)
Water Solubility No data available
Water reactive No data available
Partition coefficient: N-octanol/water log Pow = -0.74 (Lit.) (methanol)
Dynamic viscosity No data available

SECTION 10 ............................................................ STABILITY AND REACTIVITY ..............................................................

10.1 Reactivity
No data available.

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Name: Boron Trifluoride, 14% in Methanol

10.2 Chemical Stability
Stable under recommended storage conditions (See Section 7).

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Avoid incompatibilities. Protect from heat and ignition sources and moisture.
Keep out of water supplies and sewers.

10.5 Incompatible materials
Strong oxidizers, acids, acid chlorides, acid anhydrides, alkali metals, reducing agents, metals
Boron trifluoride reacts vigorously with alkyl nitrates after an induction period up to several hours.
Water, moisture, or humid air—Vapor or liquid reacts with limited amounts of water to produce BF3 hydrates and liberate flammable free methanol. Excess water can produce corrosive acids.
Will attack some types of plastics, rubber, and coatings.

10.6 Hazardous decomposition products
Combustion carbon oxides, hydrogen fluoride, borane/boron oxides
Decomposition BF3 vapor reacts rapidly with water in the air to form BF3 hydrates. Reaction with excess water forms fluoroboric acid (a strong acid), boric acid and hydroxy fluoroboric acids.

SECTION 11 ......................................................... TOXICOLOGICAL INFORMATION ..............................................................................

11.1 Toxicological Information
Acute toxicity
Oral methanol LDLo Oral – Human 143 mg/kg - Lungs, Thorax, or Respiration: Dyspnea (shortness of breath). Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Inhalation methanol LD50 Oral – Rat: 3,000 – 35,00 mg/kg;
boron trifluoride LC50 Inhalation – Rat: 1180 mg/m³
Dermal methanol LD50 Dermal – Rabbit 15,800 mg/kg
Skin corrosion/irritation Boron trifluoride in Methanol 14% w/w: Corrosive range (DOT /IATA PG II) – Corrositex®
Serious eye damage/irritation Can cause serious damage to eyes.
Respiratory or skin sensitization No data available
Germ cell mutagenicity No data available
Carcinogenicity
IARC No data available
NTP No data available
OSHA No data available
Reproductive toxicity/Teratogenicity No data available
STOT-single exposure Causes damage to organs (optic nerve, central nervous system)
STOT-repeated exposure No data available.
Aspiration hazard No data available
RTECS Number No RTECS number is available for the mixture. Boron trifluoride RTECS number is ED2275000 and the RTECS number or methanol PC1400000.

Some abbreviations used throughout this MSDS: NA=No data available; NE=not established; U=unknown/unavailable; NL=not listed; N=no; Y=yes.
11.2 Further Information

Additional symptoms: Material is very destructive mucous membranes of eyes, skin, and upper respiratory tract. Shortness of breath and central nervous system effects are possible.

SECTION 12 ............................................................ ECOLOGICAL INFORMATION

12.1 Ecotoxicity

- Methanol
  - Toxicity to Fish: Lepomis macrochirus (Bluegill) LC50 15,400 mg/L 96 h (ECOTOX)
  - Toxicity to Crustacea: Daphnia magna (Water flea) LC50 >10,000 mg/L 48 h (IUCLID)
  - Toxicity to Algae: No data available
  - Toxicity to Bacteria: Pseudomonas fluorescens 6,600 mg/L; 8 d (IUCLID)

12.2 Persistence and degradability

- Methanol: No data available for the mixture or boron trifluoride
  - Biodegradable: 99%; 30d (OECD Test Guideline 301D); Readily biodegradable

12.3 Bioaccumulative potential

- Methanol: No data available for the mixture or boron trifluoride
  - Partition coefficient: n-octanol/water: Log Pow -0.74 (Lit)
  - BCF = -0.74; Bioaccumulation is not expected. (Lit.).

12.4 Motility in soil: No data available

12.5 Results of PBT and vPvB assessment: No data available

12.5 Other adverse effects

- Additional ecological information: No data available
  - Do not discharge into the environment.

SECTION 13 ............................................................ DISPOSAL CONSIDERATIONS

13.1 Disposal methods

- U.S. EPA Waste Codes: D001, D002, F003
    Generator is responsible for proper waste characterization. NOTE: U.S. state hazardous waste regulations may differ considerably from U.S. Federal regulations.

- Waste Disposal: That which cannot be recovered or recycled, should be disposed of in accordance with all applicable international, national, regional, state, and local laws. Do NOT dump into any sewer, on ground, or into any body of water. Empty containers or equipment rinsate may be considered hazardous under regulations. Refer to the European Waste Catalogue (EWC) for appropriate code for disposal in the EC.

SECTION 14 ............................................................ TRANSPORT INFORMATION

14.1 UN number: UN 3286

14.2 UN proper shipping name: Flammable liquid, toxic, corrosive, n.o.s., (methanol, boron trifluoride)

14.3 Transport Hazard Class: 3+6.1+8

14.4 Packing group: PG II

14.5 Environmental hazards: No data available

SECTION 15 ............................................................ REGULATORY INFORMATION

15.1 Safety, health and Environmental regulations specific for the product in question.

NFPA: H3 F3 R2 Y HMIS: H3* F3 PH2 (*chronic health hazards)
15.2 Chemical Inventory Lists

Reviews, Standards, and Regulations

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This compound is sold strictly for research and development use.

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<td>RQ (lbs):</td>
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Clean Air Act

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SARA Title III Notification [40 CFR 302.4]:

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<td>TPQ (lbs):</td>
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SECTION 16 OTHER INFORMATION

16.1 Full text of H-Statements referred to under Section 2 and 3.

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<td>Flam. Liq.</td>
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<td>H225</td>
<td>Highly flammable liquid and vapor.</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed.</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic if inhaled.</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if in contact with skin.</td>
</tr>
<tr>
<td>H370</td>
<td>Causes damage to organs (optic nerve, central nervous system).</td>
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<tr>
<td>Skin Corr.</td>
<td>Skin Corrosion</td>
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<td>STOT-SE</td>
<td>Specific Target Organ Toxicity – Single Exposure</td>
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The above information is believed to be correct to the best of our present state knowledge, but does not purport to be all-inclusive and shall be used only as a guide. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

Prepared by Regis Technologies, Inc.