

Name: Boron Trifluoride, 14% in Methanol  
 Code: 1-270260-200, 1-270261-200, 1-270261-500, 1-270262-200, 1-270262-500, 1-270263-200, 1-270264-200, 1-270265-200

..... **SAFETY DATA SHEET** .....

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

- 1.1 Product Identifier
  - Name Boron Trifluoride, 14% in Methanol
  - Code 1-270260-200, 1-270261-200, 1-270261-500, 1-270262-200, 1-270262-500, 1-270263-200, 1-270264-200, 1-270265-200
- 1.2 Use of Substance/Mixture
  - Use Analytical Reagent
- 1.3 Details of Manufacturer/Supplier
  - Company Regis Technologies, Inc.  
 8210 N. Austin Avenue  
 Morton Grove, IL 60053  
 847-967-6000; 800-323-8144 (toll free)  
 Email: cservice@registech.com  
 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
  - Physical Hazards
    - Flammable Liquid Category 2 H225
  - Health Hazards
    - Acute toxicity (oral) Category 3 H301
    - Acute toxicity (dermal) Category 3 H311
    - Acute toxicity (inhalation) Category 3 H314
    - Skin Corrosion / Irritation Category 1B H314
    - Serious Eye Damage / Irritation Category 1 H318
    - Specific Target Organ Toxicity – Single Exposure, organ damage (eyes) Category 1 H370

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  
 [Prevention] P210 – Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
 P261 – Avoid breathing gas/mist/vapours/spray.  
 P264 – Wash thoroughly after handling.

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**SAFETY DATA SHEET**

[Response] P280 – Wear protective gloves/eye protection/face protection  
 P281 – Use personal protective equipment as required.  
 P301+P330+P331 – IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
 P302 + P352 - IF ON SKIN: Wash with plenty of soap and water.  
 P304+P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P308+P313 – IF exposed or concerned: Get medical advice/attention.  
 [Storage] P402 + P404 – Store in a dry place. Store in a closed container.  
 P403 + P235 – Store in a well-ventilated place. Keep cool.

**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS**

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

Hazardous components

Component	Classification	Concentration
Methanol CAS No. 67-56-1 EC No. 200-659-6 Formula CH <sub>4</sub> O Molecular Mass 32.04	Flam. Liq. 3; Acute Tox 3; STOT-SE 1; H225; H301 + H311 + H331; H370	84-88%
Boron Trifluoride CAS No. 7637-07-2 EC No. 231-569-5 Formula BF <sub>3</sub> Molecular Mass 67.81	Acute Tox 2; Skin Corr 1A; Eye Damage 1; STOT-SE 3; STOT-SE 2; H330; H314; H318; H335; H373	12-16%

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.

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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: BF<sub>3</sub> vapor reacts rapidly with water in the air to form BF<sub>3</sub> 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/m<sup>3</sup>) TWA  
   STEL  250 ppm (325 mg/m<sup>3</sup>)

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ACGIH –	TLV	200 ppm (260 mg/m <sup>3</sup> ) TWA
	STEL	250 ppm (325 mg/m <sup>3</sup> )
Boron trifluoride (7637-07-)		
OSHA –	PEL	1 ppm (3 mg/m <sup>3</sup> ) TWA (Ceiling Limit)
ACGIH –	TLV	3 ppm (2 mg/m <sup>3</sup> ) TWA
	STEL	6 ppm (16.64 mg/m <sup>3</sup> )

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 (11°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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..... **SAFETY DATA SHEET** .....

- 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.
      - methanol LD50 Oral – Rat: 3,000 – 35,00 mg/kg;
    - Inhalation
      - methanol LC50 Inhalation – Rat: 128.2 mg/L (4 hr); LC50 Inhalation – Rat: 87.6 mg/L (6 hr)
      - boron trifluoride LC50 Inhalation – Rat: 1180 mg/m<sup>3</sup>
    - 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.

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**Emergency Contact:**  
 INFOTRAC 800-535-5053 [U.S.A.]

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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 No data available for the mixture or boron trifluoride  
 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  
 Waste Characterization  
 (per U. S. regulations) RCRA Hazard Class (40CFR 261): Ignitable, Corrosive  
 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 W HMIS: H3\* F3 PH2 (\*chronic health hazards)

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**SAFETY DATA SHEET**

15.2 Chemical Inventory Lists

Reviews, Standards, and Regulations

	BF <sub>3</sub> /Methanol	BF <sub>3</sub>	Methanol
CAS Number	No data available	7637-07-2	67-65-1
TSCA:	N	Y	Y
This compound is sold strictly for research and development use.			
EINECS:	N	Y	Y
Number	No data available	231-569-5	200-659-6
CERCLA [Section 103 (40 CFR 302.4)]:	NL	NL	Y
RQ (lbs)	NA	NA	5,000
RCRA Waste Code	NL	NL	U154 (pure only)
OSHA Process Safety [29 CFR 1910.119]:	NL	Y	NL
TQ (lbs)	NA	250	NA
Clean Air Act			
[Section 112r (40 CFR 68)]:	NL	Y	NL
TQ (lbs)	NA	5,000	NA
Contains Ozone Depleters (Class I or Class II)	N	N	N
State Lists:	NL	Y	Y
States	NL on CA, FL	on CA, FL, MA	on CA, FL, MA
		MA, MN, NJ, PA	MN, NJ, PA
On CA 65 Significant Risk Level	NL	NL	NL
SARA Title III Notification [40 CFR 302.4]:			
Section 302/304 (EHS) Ingredient [40 CFR 355.3]	NL	Y	NL
TPQ (lbs)	NA	500	NA
RQ (lbs)	NA	500	NA
Section 313 Ingredient [40 CFR 372.65]	NL	Y	Y

**SECTION 16 OTHER INFORMATION**

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

Acute Tox.	Acute Toxicity
Eye Dam.	Eye Damage
Flam. Liq.	Flammable Liquids
H225	Highly flammable liquid and vapor.
H301	Toxic if swallowed.
H311	Toxic if inhaled.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H331	Toxic if in contact with skin.
H370	Causes damage to organs (optic nerve, central nervous system).
Skin Corr.	Skin Corrosion
STOT-SE	Specific Target Organ Toxicity – Single Exposure

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.

***This is the last page of this MSDS.***

Prepared by Regis Technologies, Inc.