SAFETY DATA SHEET

Creation Date 16-November-2010 **Revision Date** 26-March-2024 **Revision Number** 7

1. Identification

Product Name **Boron fluoride-methanol**

Cat No. : **B21357**

CAS-No 2802-68-8
Synonyms Anca 1040; Boron Fluoride.

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Importer/Distributor
Fisher Scientific
112 Colonnade Road,
Ottawa, ON K2E 7L6,
Canada
Tel: 1-800-234-7437

Emergency Telephone Number
For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No. **US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

WHMIS 2015 Classification Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

Flammable liquids	Category 4
Acute oral toxicity	Category 4
Acute dermal toxicity	Category 3
Acute Inhalation Toxicity	Category 3
Skin Corrosion/Irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 1
Target Organs - Respiratory system, Optic nerve, Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Kidney.	
Physical Hazards Not Otherwise Classified	Category 1
Reacts violently with water	

Label Elements

Signal Word
Danger

Hazard Statements
Combustible liquid
Harmful if swallowed
Toxic in contact with skin or if inhaled
Causes severe skin burns and eye damage
May cause respiratory irritation
Causes damage to organs
Causes damage to organs through prolonged or repeated exposure
Reacts violently with water

Precautionary Statements
Prevention
Do not allow contact with water
Keep container tightly closed
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Do not breathe dust/fumes/gas/mist/vapours/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Response
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER/doctor
Rinse mouth
Do NOT induce vomiting
Wash contaminated clothing before reuse
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant

Other Hazards
Poison, may be fatal or cause blindness if swallowed

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Borate(1-), trifluoromethoxy-, (T-4)-, hydrogen, compound with methanol (1:1)	2802-68-8	>94
Boron trifluoride	7637-07-2	1-10
Methanol	67-56-1	1-9

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms/effects Causes burns by all exposure routes. Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water mist may be used to cool closed containers. CO_2, dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire

Flash Point 68 °C / 154.4 °F

Method - No information available

Autoignition Temperature 420 °C / 788 °F

Explosion Limits

Upper	No data available
Lower	4.00%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Reacts violently with water. Combustible material. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO_2). Thermal decomposition can lead to release of irritating gases and vapors.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	2	1	W

6. Accidental release measures

Personal Precautions Use personal protective equipment as required. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Take precautionary measures against static discharges.

Environmental Precautions Should not be released into the environment. See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Do not expose spill to water. Remove all sources of ignition.

7. Handling and storage

Handling Do not get in eyes, on skin, or on clothing. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water. Keep away from open flames, hot surfaces and sources of ignition.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area. Keep away from heat, sparks and flame. Keep away from water or moist air. Incompatible Materials. Acids. Bases. Metals.

8. Exposure controls / personal protection

Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH
Boron trifluoride	Ceiling: 1 ppm Ceiling: 2.8 mg/m³ TWA: 2.5 mg/m³	TWA: 0.1 ppm TWA: 2.5 mg/m³ Ceiling: 1 ppm	TWA: 2.5 mg/m³ CEV: 1 ppm	TWA: 2.5 mg/m³ Ceiling: 1 ppm Ceiling: 2.8 mg/m³	TWA: 2.5 mg/m³ Ceiling: 1 ppm	(Vacated) TWA: 2.5 mg/m³ Ceiling: 1 ppm Ceiling: 3 mg/m³ (Vacated) Ceiling: 1 ppm (Vacated) Ceiling: 3 mg/m³	IDLH: 25 ppm Ceiling: 1 ppm Ceiling: 3 mg/m³
Methanol	TWA: 200 ppm TWA: 262 mg/m³ STEL: 250 ppm STEL: 328 mg/m³ Skin	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm TWA: 262 mg/m³ STEL: 250 ppm STEL: 328 mg/m³ Skin	TWA: 200 ppm STEL: 250 ppm Skin	(Vacated) TWA: 200 ppm (Vacated) TWA: 260 mg/m³ (Vacated) STEL: 250 ppm (Vacated) STEL: 325 mg/m³ Skin TWA: 200 ppm TWA: 260 mg/m³	IDLH: 6000 ppm TWA: 200 ppm TWA: 260 mg/m³ STEL: 250 ppm STEL: 325 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

Eye Protection	Goggles
Hand Protection	Protective gloves

Glove material	Breakthrough time	Glove thickness	Glove comments
Butyl rubber	See manufacturers recommendations	-	Splash protection only

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly
Recommended Filter type: Particulates filter conforming to EN 143 Acid gases filter Type E Yellow

When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

Prevent product from entering drains.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Light yellow
Odor	pungent
Odor Threshold	No information available
pH	2.0 Acidic
Melting Point/Range	-20 °C / -4 °F
Boiling Point/Range	59 °C / 138.2 °F @ 4 mmHg
Flash Point	68 °C / 154.4 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	4.00%
Vapor Pressure	26 hPa @ 50 °C
Vapor Density	No information available
Specific Gravity	1.21-1.235
Solubility	Hydrolyses
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	420 °C / 788 °F
Decomposition Temperature	> 60°C
Viscosity	No information available
Molecular Formula	C2 H8 B F3 O2
Molecular Weight	131.89

10. Stability and reactivity

Reactive Hazard	Yes
Stability	Moisture sensitive.

Conditions to Avoid Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water. Exposure to moisture.

Incompatible Materials Acids, Bases, Metals

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2), Thermal decomposition can lead to release of irritating gases and vapors

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing. Reacts violently with water.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Boron trifluoride	Not listed	Not listed	1180 mg/m³ (Rat) 4 h
Methanol	LD50 = 1187 – 2769 mg/kg (Rat)	LD50 = 17100 mg/kg (Rabbit)	LC50 = 128.2 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Causes burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Borate(1-), trifluoromethoxy-, (T-4)-, hydrogen, compound with methanol (1:1)	2802-68-8	Not listed	Not listed	Not listed	Not listed	Not listed
Boron trifluoride	7637-07-2	Not listed	Not listed	Not listed	Not listed	Not listed
Methanol	67-56-1	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system Optic nerve Central nervous system (CNS)

STOT - repeated exposure Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains. Contains a substance which is:. Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment. Reacts with water so no ecotoxicity data for the substance is available.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Boron trifluoride	Not listed	Not listed	Not listed	21.3 mg/L EC50 = 48 h
Methanol	Not listed	Pimephales promelas: LC50 > 10000 mg/L 96h	EC50 = 39000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min	EC50 > 10000 mg/L 24h

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Methanol	-0.74

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Methanol - 67-56-1	U154	-

14. Transport information

DOT

UN-No UN2922
Proper Shipping Name Corrosive liquid, toxic, n.o.s.
Technical Name (BORON TRIFLUORIDE DIMETHANOL COMPLEX)
Hazard Class 8
Subsidiary Hazard Class 6.1
Packing Group I

TDG

UN-No UN2922
Proper Shipping Name Corrosive liquid, toxic, n.o.s.
Hazard Class 8
Packing Group I

IATA

UN-No UN2922
Proper Shipping Name Corrosive liquid, toxic, n.o.s.
Hazard Class 8
Subsidiary Hazard Class 6.1
Packing Group I

IMDG/IMO

UN-No UN2922
Proper Shipping Name Corrosive liquid, toxic, n.o.s.
Hazard Class 8
Subsidiary Hazard Class 6.1
Packing Group I

15. Regulatory information

International Inventories

Component	CAS-No	DSL	NDSL	TSCA	TSCA Inventory notification -	EINECS	ELINCS	NLP

					Active-Inactive			
Borate(1-), trifluoromethoxy-, (T-4)-, hydrogen, compound with methanol (1:1)	2802-68-8	-	X	X	ACTIVE	220-543-9	-	-
Boron trifluoride	7637-07-2	X	-	X	ACTIVE	231-569-5	-	-
Methanol	67-56-1	X	-	X	ACTIVE	200-659-6	-	-

Component	CAS-No	IECSC	KECL	ENCS	ISHL	TCSI	AICS	NZIoC	PICCS
Borate(1-), trifluoromethoxy-, (T-4)-, hydrogen, compound with methanol (1:1)	2802-68-8	X	-	X	X	X	-	X	-
Boron trifluoride	7637-07-2	X	X	X	X	X	X	X	X
Methanol	67-56-1	X	KE-23193	X	X	X	X	X	X

Legend:
X - Listed '-' - Not Listed
KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
ENCS - Japanese Existing and New Chemical Substances
AICS - Australian Inventory of Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant Release Inventory (NPRI)	Canadian Environmental Protection Agency (CEPA) - List of Toxic Substances	Canada's Chemicals Management Plan (CEPA)
Boron trifluoride	Part 1, Group A Substance		
Methanol	Part 1, Group A Substance Part 5, Individual Substances Part 4 Substance		

Legend NPRI - National Pollutant Release Inventory

Other International Regulations

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Boron trifluoride	-	Use restricted. See item 75. (see link for restriction details)	-
Methanol	-	Use restricted. See item 69. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS-No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)

Borate(1-), trifluoromethoxy-, (T-4)-, hydrogen, compound with methanol (1:1)	2802-68-8	Not applicable	Not applicable	Not applicable	Not applicable
Boron trifluoride	7637-07-2	Listed	Not applicable	Not applicable	Not applicable
Methanol	67-56-1	Listed	Not applicable	Not applicable	Not applicable

Component	CAS-No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Borate(1-), trifluoromethoxy-, (T-4)-, hydrogen, compound with methanol (1:1)	2802-68-8	Not applicable	Not applicable	Not applicable	Not applicable
Boron trifluoride	7637-07-2	5 tonne	20 tonne	Not applicable	Not applicable
Methanol	67-56-1	500 tonne	5000 tonne	Not applicable	Not applicable

16. Other information

Prepared By
Product Safety Department
Email: chem.techinfo@thermofisher.com
www.thermofisher.com

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Disclaimer

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End of SDS