

SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier used on the label

: **Flottec 1344 Collector**

Recommended use of the chemical and restrictions on use

: Collectors for sulfide and industrial mineral applications

Chemical family

: Modified Thionocarbamate

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party:

Flottec, LLC

2505 Collingsworth Street, 2nd Floor

Houston, Texas 77026 U.S.A.

www.flottec.com

Information Telephone # : 1.713.425.7055

24 Hr. Emergency Tel # : Chemtrec 1.800.424.9300 (Within Continental U.S.); Chemtrec 1.703.527.3887 (Outside U.S.)

2. HAZARDS IDENTIFICATION

Classification of the chemical

Flammable liquids (Category 4)

Skin irritation (Category 2)

Eye irritation (Category 2A)

Skin sensitizer (Category 1)

Specific target organ toxicity, single exposure (Category 3)

Label elements

Signal Word

Warning

Hazard statement(s)

H227: Combustible liquid

H319: Causes serious eye irritation

H315: Causes skin irritation

H317: May cause an allergic skin reaction

H335: May cause respiratory irritation

H336: May cause drowsiness or dizziness

H400: Very toxic to aquatic life

Precautionary statement(s)

P210: Keep away from heat, sparks, open flames and hot surfaces. No smoking.

P261: Avoid breathing vapors, mist and spray.

P264: Wash face, hands and any exposed skin thoroughly after handling.

P271: Use only outdoors or in a well-ventilated area.

P272: Contaminated work clothing should not be allowed out of the workplace.

P273: Avoid release to the environment.

P280: Wear protective gloves, protective clothing and eye protection.

P302+352: IF ON SKIN: Wash with soap and water.

P333+313: If skin irritation or a rash occurs: Get medical advice/attention.

P304+340+P312: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.

P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

P337+313: If eye irritation persists: Get medical advice or attention.

P362+ P364: Take off contaminated clothing and wash before reuse.

P370+378: In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide for extinction.

- P391: Collect spillage.
P403+233: Store in a well ventilated place. Keep container tightly closed.
P405: Store locked up.
P501: Dispose of contents and container to a licensed chemical disposal agency in accordance with local, regional and national regulations.

Hazard pictogram(s)



Other hazards

Acute hazard to the aquatic environment (Category 1).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Common name	CAS #	Concentration / wt %
Carbamoithioic acid, 2-propenyl-, O-(2-methylpropyl) ester	86329-09-1	60 – 90
sec-Butyl alcohol	78-92-2	0 – 7.5
Isobutyl alcohol	78-83-1	0 – 7.5

The exact concentrations of the above listed chemicals are being withheld as a trade secret.

4. FIRST-AID MEASURES

Description of first aid measures

- Ingestion* : DO NOT induce vomiting, unless recommended by medical personnel. If victim is conscious wash out mouth with water and give 1-2 glasses of water to drink. Never give anything by mouth if victim is unconscious or convulsing. If spontaneous vomiting occurs, keep head below hips level to prevent aspiration into the lungs. Seek medical attention or contact a Poison Centre immediately.
- Inhalation* : Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen by trained personnel. If a problem develops or persists, seek medical attention.
- Skin Contact* : Flush with water for at least 15 minutes. Remove contaminated clothing and wash before reuse. Avoid touching eyes with contaminated body parts. If a problem develops or persists, seek medical attention.
- Eye Contact* : IMMEDIATELY flush with plenty of water. Remove contact lenses. Flush with water for at least 15 minutes. Hold eyelids apart to rinse properly. If a problem develops or persists, seek medical attention.

- Symptoms** : May cause irritation to skin and eyes. May cause an allergic reaction of the skin. May cause respiratory tract irritation. Inhalation of vapors may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea and fatigue.

- Notes to the physician** : Treat according to person's condition and specifics of exposure. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

- : Dry chemicals, water spray, chemical foam, carbon dioxide (CO₂).

Unsuitable extinguishing media

- : Do not use direct water jet.

Special hazards arising from the substance or mixture

: Combustible liquid and vapors. May be ignited by heat, sparks or flame.

Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters must wear self-contained breathing apparatus with full face mask. Firefighting suit may not be efficient against chemicals.

Special fire-fighting procedures

: Use water spray to cool fire-exposed containers. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Do not touch spilled material. Make sure to wear personal protective equipment mentioned in this Safety Data Sheet.

Environmental precautions

: Prevent entry in sewer and other enclosed area. For a large spillage, consult the Department of Environment or the relevant authorities.

Methods and material for containment and cleaning up

: Remove sources of ignition. Ventilate the area well. Stop leak, if it's possible to do so without risk. Absorb with inert material (soil, sand, vermiculite) and place in an appropriate waste disposal clearly identified. Use non-sparkling and antistatic tools. Dispose via a licensed waste disposal contractor. Finish cleaning by rinsing with soapy water the contaminated surface.

7. HANDLING AND STORAGE

Precautions for safe handling

: Keep away from heat, sparks and open flame. Avoid all sources of ignition. Use non-sparkling and antistatic tools. Ground/bond all containers when transfer large quantities (5 gallons US or 20 L and more). Use only in well-ventilated area. Do not breathe vapors, mists or aerosols. Avoid contact with skin, eyes and clothing. Wear eye protection, gloves and other protective clothing that are adapted to the task being performed and the risks involved. Keep in the workplace only the quantities necessary for the work being performed. Keep containers tightly closed when not used. Do not eat, do not drink and do not smoke during use. Wash hands, forearms and face thoroughly after handling this compound and before eating, drinking or using toilet articles. Remove contaminated clothing and wash before reuse.

Conditions for safe storage

: Storage and handling should follow the NFPA 30 Flammable and/or Combustible Liquids Code and the National Fire Code of Canada (NFCC). Ground or bond large containers. Store tightly close and in properly labeled containers in a cool, dry and well ventilated place. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Keep away from direct sunlight and heat. Store away from oxidizing materials and incompatible materials (see section 10).

Storage temperature

: 10 to 35 °C (50 to 95 °F)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Immediately Dangerous to Life or Health

Isobutyl alcohol : 1600 ppm

Sec-Butyl alcohol : 2000 ppm

Exposure limits

Isobutyl alcohol	: TWA (8h)	50 ppm	ACGIH , BC, ON
		152 mg/m3	RSST
		100 ppm	OSHA
Sec-Butyl alcohol	: TWA (8h)	100 ppm	ACGIH , BC, ON
		303 mg/m3	RSST
		150 ppm	OSHA

Exposure controls

Appropriate engineering controls : Provide sufficient mechanical ventilation (general and/or local exhaust) to keep the airborne concentrations of vapors, mists, aerosols or dust below their respective occupational exposure limits.

Respiratory protection : Respiratory protection is not required in normal use. Respiratory protection equipment (PPE) must be selected, fitted, maintained and inspected in accordance with regulations and CSA Standard Z 94.4 and approved by NIOSH / MSHA. In case of insufficient ventilation or in confined or enclosed space and for an assigned protection factor (APF) up to 10 times the

exposure limit: wear a half mask respirator with appropriate cartridges fitted with P100 filters. For an APF until maximum 100 times of exposure limit, wear a full face respirator mask with appropriate cartridges and P100 filters.

- Skin protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Wear normal work clothing covering arms and legs as required by employer code. Wear an apron or long-sleeve protective overall suit.
- Eye / face protection** : Wear chemical splash goggles. If risk of contact with eyes or the face, wear a face shield.
- Hands** : Chemical-resistant, impervious gloves should be worn at all times when handling this chemical product. Wear nitrile gloves, neoprene gloves, butyl rubber gloves or multilayer polymer laminate gloves. Before using, user should confirm impermeability. Discard gloves that show tears, pinholes, or signs of wear. Gloves must only be worn on clean hands. Wash gloves with water before removing them. After using gloves, hands should be washed and dried thoroughly.
- Other protective equipment** : Wear rubber boots to clean up a spill.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Liquid	Flammability limits (% by vol.)	: N/Av
Color	: Orange brown	Flash point	: 66°C (150.8°F) TCC
Odor	: Slight pungent garlic	Auto-ignition temperature	: 344°C (651.2°F)
Odor threshold	: N/Av	Sensibility to electrostatic charge	: Yes
pH	: N/Av	Sensibility to sparks/friction	: No
Melting/Freezing point	: N/Av	Vapor density (Air = 1)	: 3.5
Boiling point/range	: 226°C (438.8°F)	Relative density (Water = 1)	: 0.994 kg/L @ 25 °C (77 °F)
Solubility in water	: Negligible (<5%)	Partition coefficient (n-octanol/water)	: 2.84
Evaporation rate (BuAc = 1)	: N/Av	Decomposition temperature	: N/Av
Vapor pressure	: 7.9 kPa (59.3 mmHg) @ 25 °C (77 °F)	Viscosity	: N/Av
Volatiles (% by weight)	: 13	Molecular mass	: N/Av
Flammability (solid, gas)	: Combustible		

10. STABILITY AND REACTIVITY

- Reactivity** : No information available for this product.
- Chemical stability** : Stable under recommended storage conditions.
- Possibility of hazardous reactions (including polymerizations)** : Hazardous polymerization will not occur.
- Conditions to avoid** : Avoid heat, flame and sparks. Avoid contact with incompatible materials.
- Incompatible materials** : Strong oxidizing agents (such as nitric acid, perchloric acid, peroxides, chlorates and perchlorates), strong acids, strong bases.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. TOXICOLOGICAL INFORMATION

Toxicological data

Chemical name	LC ₅₀ (Inhalation, Rat)	LD ₅₀ / mg/kg	
		(Oral, Rat)	(Dermal, Rabbit)
Carbamothioic acid, 2-propenyl-, O-(2-methylpropyl) ester	N/Av	>2000	>700
Isobutyl alcohol	19.2 mg/l/4h	2460	3400
sec-Butyl alcohol	24 mg/l/4h	2193	>2000

Likely routes of exposure

- Skin** : Yes
- Eye** : Yes
- Inhalation** : Yes
- Ingestion** : Yes

Potential Health Effects:

Signs and symptoms of delayed, immediate and chronic effects:

Skin	: May cause redness and irritation of the skin. The data indicate that butyl alcohol is irritating to the skin (Draize test).
Eye	: May cause severe eye irritation or eye damage. Butyl Alcohol instilled in rabbit eyes resulted in severe corneal irritation and eye damage (OECD 405).
Inhalation	: May cause respiratory tract irritation. Inhalation of vapors may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea and fatigue.
Ingestion	: Swallowing will cause digestive tract disturbances resulting in nausea, vomiting, cramps and diarrhea.
Sensitization to material	: The product carbamothioic acid, 2-propenyl-, O-(2-methylpropyl) ester is a skin sensitizer (Guinea pig). May cause an allergic reaction of the skin. This product is not a respiratory sensitizer.
IRAC/NTP Classification	: No ingredients listed
Carcinogenicity	: Ingredients present at levels greater than or equal to 0.1% of this product are not listed as a carcinogen by IARC, ACGIH, NIOSH, NTP or OSHA.
Mutagenicity	: Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause mutagenic effect.
Reproductive Effects	: Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause effects on reproduction.
Specific target organ effects – single exposure	: Central nervous system, respiratory system.
Specific target organ effects – repeated exposure	: No target organ is listed
Other information	: The oral and skin acute toxicity estimates (ATE) of the mixture were calculated to be greater than 2000 mg/kg. The acute toxicity estimate (ATE) by inhalation of the mixture was calculated to be greater than 20 mg/L/4h. These values are not classified according to WHMIS 2015 and OSHA HCS 2012.

12. ECOLOGICAL INFORMATION

Ecotoxicity	:	Fish - Oncorhynchus mykiss - Rainbow trout	LC ₅₀ 2.8 mg/L; 96 h (OECD 203)
		Aquatic Invertebrate - Daphnia Magna, Water flea (static)	EC ₅₀ 0.006 mg/L; 48 h (OECD 202)
		Green Algae - Selenastrum capricornutum	EC ₅₀ 3.9-9.3 mg/L; 72 h (OECD 201)
		Bacteria - activated sludge	EC ₅₀ 137.5 mg/L; 3 h (OECD 209)
Persistence	:	May persist in the environment.	
Degradability	:	Thiocarbamate mixture was found to be not biodegradable (0%) under the test conditions within the 28-day exposure period (OECD Guideline 301D). Moreover, it was found not to hydrolyse at pH 4, 7 and 9. n-Butyl Alcohol is readily biodegradable. Degradation by Biochemical Oxygen Demand BOD (O ₂ consumption) was reported as 92% after 20 days.	
Bioaccumulation potential	:	Thiocarbamate mixture has a log Kow of 2.84. It is not expected to accumulate in food chains. Butyl Alcohol is soluble in water and has a low Bioconcentration Factor (BCF) of 3 and a log Kow of 0.88. BA would not be expected to accumulate in food chains.	
Mobility in soil	:	No information available for this product. n-Butyl alcohol is soluble in water. The estimated Koc value of 3.2 suggests that it is expected to have very high mobility in soil.	
Other adverse environmental effects	:	This chemical does not deplete the ozone layer.	

13. DISPOSAL CONSIDERATIONS

Handling for Disposal	:	Important! Prevent waste generation. Use in full. DO NOT puncture, cut, heat or burn container, even after use. DO NOT throw residual to sewer, streams, sewers or drinking water supply. Return empty container properly labeled to supplier or everywhere there is a recovery program. Residues and empty containers must be considered as hazardous waste. Dispose via a licensed waste disposal contractor. Observe all federal, state/provincial and municipal regulations. If necessary consult the Department of Environment or the relevant authorities.
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14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
DOT	NA1993	COMBUSTIBLE LIQUID, N.O.S. (CONTAINS ISOBUTANOL AND BUTANOL)	3	III	Combustible
Additional Information	This material is not listed as a marine pollutant. Not regulated in containers less than 120 gallons (450 L) Permit required for transportation with proper placards displayed on vehicle.				
TDG	Not regulated				
Additional Information	Emergency response guidebook 2012 - 127				
IMO/IMDG	Not regulated				
Additional Information					
IATA	Not regulated				
Additional Information					

15 - REGULATORY INFORMATION

US Federal Information:

- Toxic Substance Control Act (TSCA) :
All ingredients are listed in the TSCA Inventory or otherwise comply with TSCA requirements.
- EPCRA Section 313 Toxic Chemicals:
sec-Butyl alcohol (CAS no. 78-92-2).
- CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):
Isobutyl alcohol (CAS no. 78-83-1).
- EPCRA Section 302/304 Extremely Hazardous Substances:
No material is listed.
- Clean Water Act (CWA) 311 Hazardous Substances:
No material is listed.
- Clean Water Act (CWA) Priority Pollutants:
No material is listed.
- Clean Air Act (CAA) 111:
Isobutyl alcohol (CAS no. 78-83-1).
sec-Butyl alcohol (CAS no. 78-92-2).
- Clean Air Act (CAA 112b) HON - Hazardous Organic National Emission Air Pollutants:
No material is listed.
- Clean Air Act (CAA 112b) HAP - Hazardous Air Pollutants:
No material is listed.
- CAA 112(r) Regulated Chemicals for Accidental Release Prevention:
No material is listed.
- California Proposition 65:
No material is listed.

Canadian Information:

- Canada DSL and NDSL:
All ingredients are listed in the Domestic Substances List (DSL).
- Canadian National Pollutant Release Inventory Substances (NPRI):
Isobutyl alcohol (CAS no. 78-83-1).
sec-Butyl alcohol (CAS no. 78-92-2).

WHMIS 1988:

- Class B3 : Combustible Liquid
- Class D2B : Toxic material causing other toxic effects

NFPA



16. OTHER INFORMATION

Other special considerations for handling : Provide adequate information, instruction and training for operators.

Prepared by: Flottec, LLC

Revised by: C. Rodriguez

REASON FOR REVISION: Updated Section 1 with new Flottec address.

DISCLAIMER

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