Maximizing the Value of Flotation Chemicals Technology

SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier used on the label

: **Flottec 1661 Collector**

Recommended use of the chemical and restrictions on use

: Collectors for sulfide and industrial mineral applications

Chemical family : 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

Acute toxicity, oral (Category 4)
Skin corrosion/irritation (Category 2)
Serious eye damage/eye irritation (Category 2)
Specific target organ toxicity, single exposure, Narcotic effects (Category 3)

Label elements

Signal Word

Warning

Hazard statement(s)

H302: Harmful if swallowed
H319: Causes serious eye irritation
H315: Causes skin irritation
H336: May cause drowsiness or dizziness
H412: Harmful to aquatic life with long lasting effects

Precautionary statement(s)

P261: Avoid breathing vapors, mist and spray.
P264: Wash face, hands and any exposed skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P280: Wear protective gloves, protective clothing and eye protection.
P301+P330+P312: IF SWALLOWED: Rinse mouth. Call a POISON CENTER or a doctor if you feel unwell.
P302+352: IF ON SKIN: Wash with soap and water.
P332+313: If skin irritation occurs: Get medical advice or 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.
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 3).
Long-term hazard to the aquatic environment (Category 3)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Common name	CAS #	Concentration / wt %
O-Isopropyl ethylthiocarbamate	141-98-0	90 – 98
Isopropyl alcohol	67-63-0	2 – 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. Inhalation of vapors may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea and fatigue. Signs of toxicity are slight ataxia, piloerection, slightly reduced mobility and slight to moderate salivation.

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 (CO_2).

Unsuitable extinguishing media

: Do not use direct water jet.

Special hazards arising from the substance or mixture

: Non-Flammable. May be combustible at high temperature.

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

: 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 : 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 : 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

Isopropyl alcohol : 2000 ppm.

Exposure limits

Isopropyl alochol :	STEL	400 ppm		ACGIH , BC, ON
		500 ppm	1230 mg/m^3	RSST
	TWA (8h)	200 ppm		ACGIH , BC, ON
		400 ppm	980 mg/m^3	OSHA
		400 ppm	983 mg/m^3	RSST

Exposure controls

Appropriate engineering controls : Provide sufficient mechanical ventilation (general and/or local exhaust) to keep the airborn 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 coverall 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	**Flash point**	: >93°C (200°F) TCC
Color	: Colorless to light straw	**Auto-ignition temperature**	: 200°C (392°F)
Odor	: Characteristic	**Sensibility to electrostatic charge**	: Yes
Odor threshold	: N/Av	**Sensibility to sparks/friction**	: No
pH	: 7.9 to 8.1 @ 5%	**Vapor density (Air = 1)**	: 3.5
Melting/Freezing point	: N/Av	**Relative density (Water = 1)**	: 0.99 to 1.004 kg/L @ 20°C (68°F)
Boiling point/range	: 200°C (392°F)		
Solubility in water	: Negligible (<7%)	**Partition coefficient (n-octanol/water)**	: < 2.3
Evaporation rate (BuAc = 1)	: N/Av		
Vapor pressure	: N/Av	**Decomposition temperature**	: N/Av
Volatiles (% by weight)	: N/Av	**Viscosity**	: N/Av
Flammability (solid, gas)	: N/Av	**Molecular mass**	: N/Av
Flammability limits (% by vol.)	: N/Av		

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 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)	LD_{50} / mg/kg (Dermal, Rabbit)
O-Isopropyl ethylthiocarbamate	20 mg/l/4h	568	>2000
Isopropyl alcohol	66.1 mg/l/4h	5045	12870

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. O-Isopropyl ethylthiocarbamate is a skin irritant (OECD Guideline 439).

Eye : May cause redness and irritation to eyes. Isopropyl alcohol is slightly to severely irritating on the eyes of rabbits (OECD TG 405).

Inhalation : Inhalation of vapors may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea and fatigue.

Ingestion : Harmful if swallowed. Swallowing will causes digestive tract disturbances resulting in nausea, vomiting, cramps and diarrhea. Signs of toxicity are slight ataxia, piloerection, slightly reduced mobility and slight to moderate salivation.

Sensitization to material : Ingredients present at levels greater than or equal to 0.1% of this product are skin or respiratory sensitizers.

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.

Specific target organ effects – repeated exposure

: No target organ is listed

Other information : The oral acute toxicity estimate (ATE) of the mixture was calculated to be greater than 300 mg/Kg but lower than 2000 mg/kg. This value is classified according to GHS: Acute toxicity, oral (Category 4). The acute toxicity estimate (ATE) by inhalation of the mixture was calculated to be greater than 20 mg/L/4h. This value is not classified according to GHS. The skin acute toxicity estimate (ATE) of the mixture was calculated to be greater than 2000 mg/kg. This value is not classified according to WHMIS and OSHA HCS 2012.

12. ECOLOGICAL INFORMATION

Ecotoxicity :

Fish - Danio rerio	LD_{50}	63 mg/L; 96 h (O-Isopropyl ethylthiocarbamate) OECD 203
Aquatic Invertebrate - Daphnia magna (semi-static)	EC_{50}	60 mg/L; 48 h (O-Isopropyl ethylthiocarbamate) OECD 202
Aquatic Plant - Algea, Pseudokirchnerilla subcapitata	EC_{50}	20.8 mg/L; 72 h (O-Isopropyl ethylthiocarbamate) OECD 201
Fish - Fathead minnow, Pimephales promelas - fresh water	LC_{50}	9640 mg/L; 96 h (Isopropyl alcohol)

Persistence : May persist in the environment.

Degradability : O-isopropylique ethylthiocarbamate was found to be not biodegradable (2.1%) under the test conditions within the 28-day exposure period (OECD Guideline 301D). Moreover, it was found not to hydrolyse at pH 4 to 9, half-life greater than 1 year at 25°C (OECD Guideline 111). Isopropyl alcohol and n-propanol are soluble in water and will quickly evaporate into the air. There is no partition in the ground.

Bioaccumulation potential : No information available for this product. The Log Kow values <0.4 and bioconcentration factor (BCF) values <1 for isopropyl alcohol show no potential to bioaccumulate (IUCLID).

Mobility in soil : No information available for this product. O-isopropylique ethylthiocarbamate has a low solubility in water, and then a low mobility in soil is to be expected. Isopropyl alcohol is soluble in water and will quickly evaporate into the air. There is no partition in the ground.

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.

14. TRANSPORTATION INFORMATION

Regulatory Information	UN Number	UN proper shipping name	Transport hazard class(es)	Packing Group	Label
DOT	Not regulated				
Additional Information		This material is not listed as a marine pollutant.			
TDG	Not regulated				
Additional Information		Emergency response guidebook 2012 - 128			
IMO/IMDG	Not regulated				
Additional Information					
IATA	Not regulated				
Additional Information					

15 - REGULATORY INFORMATION

US Federal Information:

- Toxic Substance Control Act (TSCA)
  This material is listed in the TSCA Inventory or otherwise comply with TSCA requirements.
- EPCRA Section 313 Toxic Chemicals:
  Isopropyl alcohol (CAS no. 67-63-0).
- CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):
  No material is listed.
- 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:
  Isopropyl alcohol (CAS no. 67-63-0).
- 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):
  Isopropyl alcohol (CAS no. 67-63-0).

WHMIS 1988:

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. Yuen
REASON FOR REVISION: Section 1 – updated Flottec address	

DISCLAIMER

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