

## SAFETY DATA SHEET

### 1. IDENTIFICATION

**Product identifier used on the label**

: **Flottec F131A Frother**

**Recommended use of the chemical and restrictions on use**

: Flotation chemical used in mining industry. Alcohol based frother.

**Chemical family**

: Mixed alcohols, heavy aldehydes, esters

**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 3)

Skin irritation (Category 2)

Serious eye damage (Category 1)

Reproductive toxicity (Category 2)

Specific target organ toxicity, single exposure, Respiratory tract irritation (Category 3)

**Label elements**

**Signal Word**

Danger

**Hazard statement(s)**

H226: Flammable liquid and vapor

H318: Causes serious eye damage

H315: Causes skin irritation

H335: May cause respiratory irritation

H361F: Suspected of damaging fertility

H303 + H313: May be harmful if swallowed or in contact with skin

**Precautionary statement(s)**

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

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

P240: Ground or bond container and receiving equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P260: Do not breathe vapors, mist and dust.

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

P271: Use only in a well-ventilated area.

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

P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P303+361+353: IF ON SKIN (or hair): Remove immediately all contaminated clothing. Rinse skin with water and soap or take a shower if necessary.

P332+313: If skin irritation occurs: Get medical advice or attention.

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

- P310: Immediately call a doctor/physician.  
P362+ P364: Take off contaminated clothing and wash before reuse.  
P370+378: In case of fire: Use chemical foam, dry chemical or carbon dioxide for extinction.  
P403+P235+P233: Store in a well-ventilated place. Keep container tightly closed. Keep cool.  
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 toxicity, oral (Category 5)  
Acute toxicity, dermal (Category 5)

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Common name	CAS #	Concentration / wt %
Methyl amyl alcohol	108-11-2	50 – 70
1-Propene, hydroformylation products, high-boiling	68551-11-1	35 – 40

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 severe eye irritation or eye damage. May cause redness and irritation of the skin. May cause irritation to nose, throat and respiratory tract. Swallowing will causes digestive tract disturbances resulting in nausea, vomiting, cramps and diarrhea.
- 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, chemical foam, carbon dioxide (CO<sub>2</sub>).

*Unsuitable extinguishing media*

- : Do not use direct water jet.

**Special hazards arising from the substance or mixture**

- : Flammable liquid and vapors. May be ignited by heat, sparks, flame or static electricity.

**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-sparking 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-sparking 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 labelled 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**

- : <30°C (86°F)

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Immediately Dangerous to Life or Health**

**Methyl amyl alcohol** : 400 ppm.

**Exposure limits**

<b>Methyl amyl alcohol</b>	: STEL	40 ppm		ACGIH, BC, ON
		40 ppm	167 mg/m <sup>3</sup>	RSST (Pc)
	: TWA (8h)	25 ppm		ACGIH, BC, ON, OSHA
		25 ppm	104 mg/m <sup>3</sup>	RSST (Pc)

**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. Ensure that eyewash stations and safety showers are close to the workstation

**Respiratory protection**

- : Respiratory protection is not required in normal use. 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 organic vapor cartridges fitted with P100 filters. For an APF until maximum 100 times of exposure limit, wear a full face respirator mask with organic vapor 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. To clean up a spill, if

necessary, wear a synthetic polyethylene coveralls such as the Tychem (DuPont) or equivalent coveralls manufactured to provide protection against liquid chemical

- 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.
- Eye / face protection** : Wear chemical splash goggles. If risk of contact with eyes or the face, wear a face shield.
- Other protective equipment** : Wear safety shoes. Wear rubber boots to clean up a spill.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state</b>	: Liquid	<b>Flammability (solid, gas)</b>	: Combustible
<b>Color</b>	: Colorless to light straw	<b>Flammability limits (% by vol.)</b>	: 1 to 8%
<b>Odor</b>	: Mild odor of alcohol and aldehyde	<b>Flash point</b>	: > 40°C (104°F) TCC
<b>Odor threshold</b>	: >0.3 ppm	<b>Auto-ignition temperature</b>	: 583°C (1081.4°F)
<b>pH</b>	: N/Av	<b>Sensibility to electrostatic charge</b>	: Yes
<b>Melting/Freezing point</b>	: N/Av	<b>Sensibility to sparks/friction</b>	: No
<b>Boiling point/range</b>	: 132°C (269.6°F)	<b>Vapor density (Air = 1)</b>	: 3.5
<b>Solubility in water</b>	: Insoluble (<2%)	<b>Relative density (Water = 1)</b>	: 0.82 kg/L @ 25°C (77°F)
<b>Evaporation rate (BuAc = 1)</b>	: < Butyl acetate	<b>Partition coefficient (n-octanol/water)</b>	: N/Av
<b>Vapor pressure</b>	: 0.67 kPa (5 mm Hg) @ 21°C (69.8°F)	<b>Decomposition temperature</b>	: 100°C (212°F)
<b>Volatiles (% by weight)</b>	: > 90%	<b>Viscosity</b>	: N/Av
		<b>Molecular mass</b>	: 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 under recommended storage.
- 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), inorganic acids, strong acids, halogens.
- 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 <sub>50</sub> (Inhalation, rat)	LD <sub>50</sub> / mg/kg	
		(Oral, rat)	(Dermal, rabbit)
Methyl amyl alcohol	>16 mg/l/4h	2590	2870
1-Propene, hydroformylation products, high-boiling	>3.2 mg/l/4h	>5000	>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 slight irritation of the skin. Methyl amyl alcohol causes skin erythema with slight oedema fully reversible within 14 days (OECD TG 404). Dryness and sloughing also

- developed in all animals. 1-Propene, hydroformylation products, high-boiling (CAS no 68551-11-1) is not irritating to rabbit skin (OECD TG 404). May be harmful by skin contact. Widespread contact with skin for several hours can cause harmful amounts of material to be absorbed.
- Eye** : May cause severe eye irritation or eye damage. Methyl amyl alcohol causes eye irritation in rabbits (OECD TG 405). All animals developed corneal opacification, iridial inflammation, and conjunctival irritation. All reactions fully reversible within 7 to 14 days after instillation. 1-Propene, hydroformylation products, high-boiling (CAS no 68551-11-1) is irritating to eyes (rabbit, OECD TG 405). Moreover, it is not fully reversible within 20 days.
- Inhalation** : May be harmful by inhalation. May cause irritation to nose, throat and respiratory tract. High concentrations may cause central nervous system depression characterized by headache, dizziness, vertigo, nausea, drowsiness and fatigue.
- Ingestion** : May be harmful if swallowed. Swallowing will causes digestive tract disturbances resulting in nausea, vomiting, cramps and diarrhea.
- Sensitization to material** : Ingredients present at levels greater than or equal to 0.1% of this product are skin or respiratory sensitizers. Skin sensitization, Guinea pig (OECD 406): tests performed with each ingredient of this mixture gave negative results.
- 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** : Some of the components of 1-Propene, hydroformylation products, high-boiling (CAS no 68551-11-1) have been evaluated and found to have minimal reproductive toxicity. The substance may cause damage to the testes after repeated ingestion, as shown in animal studies.
- Specific target organ effects – single exposure**  
: Respiratory system, central nervous 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 (aerosol/mist) of the mixture was calculated to be greater than 5 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 <sub>50</sub> | >100 mg/L; 96h (F131A) OECD 203           |
| Aquatic Invertebrate - Daphnia magna (static) | EC <sub>50</sub> | 710 mg/L; 48h (F131A) OECD 202            |
| Fish - Branchydanio Renio - fresh water       | LD <sub>50</sub> | 68 mg/L; 96h (CAS no 68551-11-1) OECD 203 |
- Persistence** : No persistent in environment..
- Degradability** : Methyl amyl alcohol is readily biodegradable based on BOD5/COD >0.91. The product is degraded rapidly by photo-chemical reactions in air through indirect photolysis with production hydroxyl free radicals. 1-Propene, hydroformylation products, high-boiling are readily biodegradable, 100% in 23 days (OECD 301F ready biodegradability test guideline).
- Bioaccumulation potential** : This mixture is readily biodegradable (94% in 20 days). Degradation by Biochemical Oxygen Demand BOD5 (O<sub>2</sub> consumption) was reported as 38-50% in 5 days. Chemical Oxygen Demand (COD) is 2.43 mg/mg. Methyl amyl alcohol has a Bioconcentration Factor (BCF) value of 7.2, and its Log Kow value is 1.43, indicating its potential to bioaccumulate is low. 1-Propene, hydroformylation products, high-boiling have a partition factors Log Kow of 0.6 to 3.2, indicating that they should not accumulate in the food chain.
- Mobility in soil** : No information available for this product. The estimated Koc value of 35 suggests that Methyl amyl alcohol is expected to have very high mobility in soil (TOXNET Databases). 1-Propene, hydroformylation products, high-boiling have low volatility and low soluble in water. Then product should migrate towards the 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. 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	UN 1993	FLAMMABLE LIQUID, N.O.S. (contains METHYL ISOBUTYL CARBINOL, COMPLEX OXYGENATED/HYDROCARBON MIXTURE)	3	III	Flammable Liquid
<b>Additional Information</b>		This material is not listed as a marine pollutant. Permit required for transportation with proper placards displayed on vehicle.			
TDG	UN 1993	FLAMMABLE LIQUID, N.O.S. (contains METHYL ISOBUTYL CARBINOL, COMPLEX OXYGENATED/HYDROCARBON MIXTURE)	3	III	Flammable Liquid
<b>Additional Information</b>		Emergency response guidebook 2012 - 128			
IMO/IMDG	UN 1993	FLAMMABLE LIQUID, N.O.S. (contains METHYL ISOBUTYL CARBINOL, COMPLEX OXYGENATED/HYDROCARBON MIXTURE)	3	III	Flammable Liquid
<b>Additional Information</b>		Emergency schedules (EmS-No) F-E, S-E			
IATA	UN 1993	FLAMMABLE LIQUID, N.O.S. (contains METHYL ISOBUTYL CARBINOL, COMPLEX OXYGENATED/HYDROCARBON MIXTURE)	3	III	Flammable Liquid
<b>Additional Information</b>					

### 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:  
No material is listed.
- 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:  
Methyl amyl alcohol (CAS no 108-11-2).
- Clean Air Act (CAA 112b) HON - Hazardous Organic National Emission Air Pollutants:  
Methyl amyl alcohol (CAS no 108-11-2).
- 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):  
No material is listed.

**WHMIS 1988:**

- Class B3 : Combustible Liquid
- Class E : Corrosive material

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**

The above information is believed to be accurate and represents the best information currently available to us. However, we make no warrantee of merchantability or any other warrant, expressed or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular uses.

**END OF DOCUMENT**