

SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier used on the label

: **Flottec F140 Frother**

Recommended use of the chemical and restrictions on use

: Foaming agents

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 4)

Acute toxicity, inhalation (Category 4)

Skin irritation (Category 2)

Serious eye damage (Category 1)

Reproductive toxicity (Category 2)

Specific target organ toxicity, single exposure (Category 3)

Label elements

Signal Word

Danger

Hazard statement(s)

H227: Combustible liquid

H318: Causes serious eye damage

H302: Harmful if swallowed

H315: Causes skin irritation

H335: May cause respiratory irritation

H336: May cause drowsiness or dizziness

H361: Suspected of damaging fertility or the unborn child

H402: Harmful to aquatic life

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.

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.

P273: Avoid release to the environment.

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

P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician 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.

P310: Immediately call a doctor/physician.

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.

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 3).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Common name	CAS #	Concentration / wt %
High boiling by-products from the manufacturing process of 2-ethylhexanol	68609-68-7	50 - 75
1-Propene, hydroformylation products, high-boiling	68551-11-1	20 - 40
2-ethylhexane-1,3-diol	94-96-2	< 5
2-ethyl hexanol	104-76-7	< 2

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. High concentrations may cause central nervous system depression characterized by headache, dizziness, vertigo, nausea, drowsiness and fatigue. Swallowing will cause 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

: Dried powder, water spray, carbon dioxide (CO₂), chemical foam.

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-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. Turn off all pilot lights, flames, stoves, heaters, electric motors, welding equipment and other 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 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

: < 40 °C (104 °F)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Immediately Dangerous to Life or Health

: No IDLH value reported.

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 coverall suit.
- Eye / face protection** : Wear chemical splash goggles. If risk of contact with eyes or the face, wear a face shield.
- Hands** : Wear nitrile or neoprene gloves. Chemical-resistant, impervious gloves should be worn at all times when handling this chemical product. 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 safety shoes. Wear rubber boots to clean up a spill.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: Liquid	Flammability limits (% by vol.)	: N/Av
Color	: Light to dark straw yellow	Flash point	: >63°C (145.4°F) PMCC
Odor	: Slight alcohol odor	Auto-ignition temperature	: N/Av
Odor threshold	: N/Av	Sensibility to electrostatic charge	: Yes
pH	: 5	Sensibility to sparks/friction	: No
Melting/Freezing point	: N/Av	Vapor density (Air = 1)	: > 1
Boiling point/range	: > 125 °C (257 °F)	Relative density (Water = 1)	: 0.90 kg/L @ 25°C (77°F)
Solubility in water	: Insoluble	Partition coefficient (n-octanol/water)	
Evaporation rate (BuAc = 1)	: N/Av		: 0.6 to 3.2
Vapor pressure	: 2.07kPa (15.5 mm Hg)	Decomposition temperature	: N/Av
Volatiles (% by weight)	: N/Av	Viscosity	: N/Av
Flammability (solid, gas)	: Combustible	Molecular mass	: 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 heat, flame and sparks. Avoid contact with incompatible materials.
- Incompatible materials** : Strong oxidizing agents (such as nitric acid, perchloric acid, peroxides, chlorates and perchlorates).
- 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)
High boiling by-products from the manufacturing process of 2-ethylhexanol	> 5.4 mg/L (aerosol)	> 5000 mg/kg	> 2000 mg/kg
1-Propene, hydroformylation products, high-boiling	>3.2 mg/l/4h	>5000 mg/kg	>2000 mg/kg
2-Ethylhexanol	>2000 ppm/6h <5 mg/l/4h	2040 mg/kg	>2000 mg/kg

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. 2-Ethylhexanol causes skin irritation in rabbits (OECD TG 404). Severe erythema and oedema was reported in all treated animals at 24 hours after treatment, persisting until 72 hours. 1-Propene, hydroformylation products, high-boiling (CAS no 68551-11-1) is not irritating to rabbit skin (OECD TG 404). The data indicate that butyl alcohol are irritating to the skin (Draize test).
- Eye** : May cause severe eye irritation or eye damage. 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. 2-Ethylhexanol causes eye irritation in rabbits (OECD TG 405). Severe iritis and moderate corneal opacity were seen in all animals at 24 and 48 hours after treatment.
- Inhalation** : Harmful if inhaled. May cause irritation to nose, throat and respiratory tract. Inhalation of vapors may cause central nervous system depression such as drowsiness, headache, dizziness, vertigo, nausea 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.
- 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** : 2-Ethylhexanol was reported to cause developmental toxicity, but not teratogenicity, in rats following exposure via the oral route, in the absence of signs of marked maternal toxicity (OECD TG 414). 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. These values are not classified according to WHMIS 2015 and OSHA HCS 2012. The acute toxicity estimate (ATE) by inhalation (mists/aerosols) of the mixture was calculated to be greater than 1 mg/L/4h but lower than 5 mg/L/4h. This value is classified according to GHS: Acute toxicity, inhalation (Category 4).

12. ECOLOGICAL INFORMATION

- Ecotoxicity** :

Fish - Golden Orfe	LC ₅₀	17.1 mg/L; 96h (2-Ethylhexanol) OEDC 203
Aquatic Invertebrate - Daphnia Magna, Water flea, fresh water	EC ₅₀	39 mg/L; 48h (2-Ethylhexanol) OEDC 202
Aquatic Plant - Algae, Scenedesmus subspicatus	EC ₅₀	11.5-16.6 mg/L; 72h (2-Ethylhexanol)
Fish - Branchydanio Renio - fresh water	LC ₅₀	68 mg/L; 96h (CAS no 68551-11-1) OEDC 203
Aquatic Invertebrate - Daphnia magna	EC ₅₀	63.6 mg/L; 48h (CAS no 68551-11-1) OEDC 202
Aquatic Plant - Algae, Pseudokirchnerilla subcapitata	EC ₅₀	98 mg/L; 72h (CAS no 68551-11-1) OEDC 201
Aquatic Invertebrates (Chronic toxicity) - Daphnia magna	NOEC	10 mg/L; 21 days (CAS no 68551-11-1) OEDC 211
- Persistence** : No persistent in environment.
- Degradability** : No information available for this product. 1-Propene, hydroformylation products, high-boiling are readily biodegradable, 100% in 23 days (OECD 301F ready biodegradability test guideline). 2-Ethylhexanol is readily biodegradable (OECD TG 301C). Degradation by BOD (O₂ consumption) was reported as 79 % in 14 days.
- Bioaccumulation potential** : No information available for this product. 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. 2-Ethylhexanol has a Bioconcentration Factor (BCF) value of 30, and its Log Kow value is 2.73, indicating its potential to bioaccumulate is low.



Mobility in soil : No information available for this product. 1-Propene, hydroformylation products, high-boiling have low volatility and low soluble in water. Then product should migrate towards the soil. The estimated Koc value of 35 suggests that 2-Ethylhexanol is expected to have very high mobility in soil (TOXNET Databases). The estimated Koc value of 35 suggests that 2-Ethylhexanol is expected to have very high mobility in soil (TOXNET Databases).

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	NA1993	COMBUSTIBLE LIQUID, N.O.S. (COMPLEX OXYGENATE, HYDROCARBON MIXTURE)	3	III	Combustible
Additional Information		Not regulated in containers less than 120 gallons (450 L)			
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):
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):
High boiling by-products from the manufacturing process of 2-ethylhexanol (CAS no 68609-68-7).
- 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:
No material is listed.
- 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:
- 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 D2B : Toxic material causing other toxic effects

NFPA



HMIS



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: Updated section 12

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