Maximizing the Value of Flotation Chemicals Technology

SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier used on the label

: **Flottec F144 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 703-527-3887 (Outside U.S.)

2. HAZARDS IDENTIFICATION

Classification of the chemical

Flammable liquids (Category 3)
Serious eye damage (Category 1)
Acute toxicity, inhalation (Category 4)
Specific target organ toxicity, single exposure (Category 3)
Reproductive toxicity (Category 2)

Label elements

Signal Word

Danger

Hazard statement(s)

H226: Flammable liquid and vapor
H318: Causes serious eye damage
H332: Harmful if inhaled.
H335: May cause respiratory irritation
H336: May cause drowsiness or dizziness
H361: Suspected of damaging fertility or the unborn child

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.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P242: Use only non-sparking tools.
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.
P280: Wear protective gloves, protective clothing and eye protection.
P303+361+353: IF ON SKIN: Immediately take off all contaminated clothing. Wash with soap and water. In case of fire, use dried powder, water spray, carbon dioxide (CO2), or chemical foam to extinguish.
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.
P308+313: IF exposed or concerned: Get medical advice or attention.
P362+ P364: Take off contaminated clothing and wash before reuse.
P403+235: Store in a well ventilated place. 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

N/A

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Common name	CAS #	Concentration / wt %
1-Propene, hydroformylation products, high-boiling	68551-11-1	100

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 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

: 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 : < 35 °C (95 °F)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Immediately Dangerous to Life or Health

: N/Ap

Exposure limits

: N/Ap

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	:	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	**Flash point**	:	41°C (105°F) TCC
Color	:	Amber	**Auto-ignition temperature**	:	N/Av
Odor	:	Aromatic	**Sensibility to electrostatic charge**	:	N/Av
Odor threshold	:	N/Av	**Sensibility to sparks/friction**	:	N/Av
pH	:	N/Av	**Vapor density (Air = 1)**	:	N/Av
Melting/Freezing point	:	< -50 °C (-54 °F)	**Relative density (Water = 1)**	:	0.80 to 0.95 kg/L @ 25°C (77°F)
Boiling point/range	:	89 °C (192 °F)			
Solubility in water	:	Very slightly soluble	**Partition coefficient (n-octanol/water)**	:	0.6 to 3.2
Evaporation rate (BuAc = 1)	:	N/Av	**Decomposition temperature**	:	N/Av
Vapor pressure	:	N/Av	**Viscosity**	:	N/Av
Volatiles (% by weight)	:	N/Av	**Molecular mass**	:	N/Ap
Flammability (solid, gas)	:	N/Ap			
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 heat, flame and sparks. Avoid contact with incompatible materials.
Incompatible materials	:	Strong oxidizing agents (such as nitric acid, perchloric acid, peroxides, chlorates and perchlorates), alkali or alkaline earth metals.
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)
1-Propene, hydroformylation products, high-boiling	>3.2 mg/l/4h	>5000 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	:	1-Propene, hydroformylation products, high-boiling (CAS no 68551-11-1) is not irritating to rabbit skin (OECD TG 404).
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.

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	:	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 are greater than 2000 mg/kg. These values are not classified according to WHMIS 2015 and OSHA HCS 2012. The acute toxicity by inhalation (mists/aerosols) is 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 - 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 - Algea, 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	:	Not persistent in environment.
Degradability	:	1-Propene, hydroformylation products, high-boiling are readily biodegradable, 100% in 23 days (OECD 301F ready biodegradability test guideline).
Bioaccumulation potential	:	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	:	1-Propene, hydroformylation products, high-boiling have low volatility and low solubility in water. The 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	UN1993	FLAMMABLE LIQUID, N.O.S. (contains 1-PROPENE, HYDROFORMYLATION PRODUCTS, HIGH-BOILING)	3	III	Flammable
Additional Information					
TDG	UN1993	FLAMMABLE LIQUID, N.O.S. (contains 1-PROPENE, HYDROFORMYLATION PRODUCTS, HIGH-BOILING)	3	III	Flammable
Additional Information					
IMO/IMDG	UN1993	FLAMMABLE LIQUID, N.O.S. (contains 1-PROPENE, HYDROFORMYLATION PRODUCTS, HIGH-BOILING)	3	III	Flammable
Additional Information					
IATA	UN1993	FLAMMABLE LIQUID, N.O.S. (contains 1-PROPENE, HYDROFORMYLATION PRODUCTS, HIGH-BOILING)	3	III	Flammable
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):
  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:
  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:
  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 B2 : Flammable 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. Yuen
REASON FOR REVISION: Section 15: updated WHMIS class	

DISCLAIMER

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