Maximizing the Value of Flotation Chemicals Technology

SAFETY DATA SHEET

1. IDENTIFICATION

Identification of the product used on the label

: **Flottec F781-12 Frother**

Recommended use of chemicals and restrictions on use

: Flotation reagent used in the mining industry.

Chemical group: Mixture of alcohols

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

Número de teléfono **:** 1.713.425.7055

Teléfono de emergencia 24 Horas: Chemtrec 1-800-424-9300 (Dentro del País E.U.); Chemtrec 703-527-3887 (Fuera de E.U.)

2. HAZARDS IDENTIFICATION

Hazard pictogram(s)

H302: Harmful by ingestion.
H319: Causes severe eye irritation.
H312: Harmful in contact with theskin.

Classification of the chemical

Flammable liquids (category 4)
Eye irritation (Category 2)
Acute, oral toxicity (Category 4)
Acute, dermal toxicity (Category 4)

Label elements

Signal Word

Danger

Hazard statement(s)

H227: Combustible liquid
H319: Causes severe eye irritation.
H302: Harmful by ingestion.
H312: Harmful in contact with the skin.

Precautionary statement(s)

Q210: Keep away from heat, sparks, open flames and hot surfaces. No Smoking.
P233: Keep the container tightly closed.
Q264: Wash your face, hands, and exposed skin thoroughly after handling.
Q270: Do not eat, drink, or smoke when using this product.
P280: Wear protective gloves, protective clothing, and eye protection.
P301 + P312: IN CASE OF INGESTION: Call a TOXICOLOGY CENTER/doctor if you are not feeling well.
Q330: Rinse your mouth.
Q312: Call a TOXICOLOGY CENTER/doctor if you are not feeling well.
P303 + P361 + P353: IN CASE OF CONTACT WITH THE SKIN (or hair): Remove contaminated clothing immediately. Rinse the skin with water / shower.

P305 + P351 + P338: IN CASE OF EYE CONTACT: rinse carefully with water for several minutes. Remove contact lenses, if they are present and are easy to make. Continue rinsing.
P337 + P313 If eye irritation persists: get medical attention/advice.
P363: Wash contaminated clothing before re-use.
P370 + P378: In case of fire: use dry sand, dry chemical powder or alcohol resistant foam to extinguish.
P403 + P235: Store in a well-ventilated place. Stay calm.
Q501: Remove contents/container at an approved waste disposal plant.

Other hazards

None

3. COMPOSICIÓN/INFORMACIÓN DE INGREDIENTES

Common name	CAS #	Concentration / wt %
	111-27-3	50-80
Polyether Polyglycol	25322-69-4	10-20
Glycol ethers	Proprietary	10-20

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. Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

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 (CO_2), chemical foam.

Unsuitable extinguishing media

: None known.

Special hazards arising from the substance or mixture

: Combustible liquid.

Flash Point : >60 °C (142 F)
Explosion Limits : Upper ~8.0 vol %
Explosion Limits : Lower ~1.2 vol %
Autoignition Temperature : 290 °C (555 F)
Decomposition Temperature : 100 °C (212 F)

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. 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 : It is recommended to store product in carbon steel with effective moisture control, carbon steel coated with baked phenolic, fiberglass reinforced plastic with epoxy or polyester resin, or metallic zinc in an inorganic binder. 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 closed 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 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.)**	:	Upper ~8.0, Lower ~1.2
Color	:	Brown	**Flash point**	:	>60 °C (142 F)
Odor	:	Sweet	**Auto-ignition temperature**	:	290 °C (555 F)
Odor threshold	:	N/Av	**Sensibility to electrostatic charge**	:	Yes
pH	:	N/Ap	**Sensibility to sparks/friction**	:	Yes
Melting/Freezing point	:	< -49 °C (-45 F)	**Vapor density (Air = 1)**	:	4.5
Boiling point/range	:	156 to 158 °C (313 to 316 F)	**Relative density (Water = 1)**	:	0.86 @ 15°C
			Partition coefficient (n-octanol/water)	:	N/Av
Solubility in water	:	0.59 g/100g	**Decomposition temperature**	:	100 °C (212 F)
Evaporation rate (BuAc = 1)	:	N/Av	**Viscosity**	:	N/Av
Vapor pressure	:	0.5 mm Hg @ 21°C	**Molecular mass**	:	102.18
Volatiles (% by weight)	:	N/Av			
Flammability (solid, gas)	:	N/Ap			

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), inorganic acids, and 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_{50} (Inhalation, rat)	LD_{50} / mg/kg (Oral, rat)	LD_{50} / mg/kg (Dermal, rabbit)
n-Hexanol	>21 mg/L/1 hr	720 - 4900	1500 - 2300

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 irritation to skin.
Eye	:	May cause severe eye irritation or eye damage.
Inhalation	:	May cause irritation to nose, throat and respiratory tract. Inhalation of vapors may cause drowsiness, headache, dizziness, vertigo, nausea and fatigue.
Ingestion	:	Harmful if swallowed. Swallowing will cause 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 not 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 reproductive effect.

Specific target organ effects – single exposure

: Eyes, skin.

Specific target organ effects – repeated exposure

: No target organ is listed

Other information : The oral and skin acute toxicity are less than 2000 mg/kg. These values are classified according to GHS: Acute toxicity, oral/dermal (Category 4). The acute toxicity by inhalation (mists/aerosols) is greater than 5 mg/L/4h. This value is not classified according to WHMIS 2015 and OSHA HCS 2012.

12. ECOLOGICAL INFORMATION

Ecotoxicity :

Fish - fresh water	LC_{50}	>100 mg/L; 96h
Aquatic Invertebrate - Daphnia magna	EC_{50}	201 mg/L; 24h

Persistence : Not persistent in environment.

Degradability : 1-Hexanol is biodegradable – 1.2 g O_2 uptake/g hexanol in 7 days in river water.

Bioaccumulation potential : No information available for this product.

Mobility in soil : Will likely be mobile due tosolubility in water.

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. (Contains C6 alcohols)	3	III	Combustible
Additional Information		Not regulated in containers less than 120 gallons (450 L)			
TDG	Not regulated				
Additional Information					
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):
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.

16. OTHER INFORMATION

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

Prepared by: Flottec, LLC **Revised by:**

REASON FOR REVISION: Updated Section 1 chemical family, and Section 3 composition, as well as Section 2 classification, Section 5 and 9 flash point info and Section 14 shipping classifications to more accurately reflect the combustible nature of the product.

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