

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

- Product Name** • Direct to Screen / DTS Z-1, Z-2, Z-3
Product Description • Purple or blue liquid

1.2 Relevant identified uses of the substance or mixture and uses advised against

- Relevant identified use(s)** • Water-based emulsion

1.3 Details of the supplier of the safety data sheet

- Manufacturer** • IKONICS Corporation
4832 Grand Ave.
Duluth, MN 55807
United States
www.ikonics.com
sds@ikonics.com
- Telephone (General)** • (218) 628-2217
Telephone (General) • (800) 328-4261 - Toll free

1.4 Emergency telephone number

- Chemtrec** • 1-800-424-9300 - Within USA and Canada
• +1 703-527-3887 - Outside USA and Canada (collect calls accepted)

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]

2.1 Classification of the substance or mixture

- CLP** • Skin Irritation 2 - H315
Skin Sensitization 1 - H317
Eye Irritation 2 - H319
Hazardous to the aquatic environment Chronic 3 - H412
EUH208

2.2 Label Elements

CLP

WARNING



- Hazard statements** • H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H319 - Causes serious eye irritation
H412 - Harmful to aquatic life with long lasting effects
EUH208 - Contains sensitizing substance (acrylate oligomers; Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate). May produce an allergic reaction.

Precautionary statements

- Prevention** • P261 - Avoid breathing dust, fume, gas, mist, vapors and/or spray.
P264 - Wash thoroughly after handling.
P272 - Contaminated work clothing should not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.

- Response** • P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P321 - Specific treatment, see supplemental first aid information.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.

- Storage/Disposal** • P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other Hazards

- CLP • No data available

UN GHS Revision 7

According to: UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Seventh Revised Edition

2.1 Classification of the substance or mixture

- UN GHS • Skin Irritation 2
Skin Sensitization 1
Eye Irritation 2
Hazardous to the aquatic environment Acute 2
Hazardous to the aquatic environment Chronic 3

2.2 Label elements

UN GHS

WARNING



- Hazard statements** • Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation
Toxic to aquatic life
Harmful to aquatic life with long lasting effects

Precautionary statements

- Prevention** • Avoid breathing dust, fume, gas, mist, vapors and/or spray.
Wash thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
- Response** • IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment, see supplemental first aid information.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

- Storage/Disposal** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

UN GHS • No data available

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 • Skin Irritation 2
Skin Sensitization 1
Eye Irritation 2

2.2 Label elements

OSHA HCS 2012

WARNING



Hazard statements • Causes skin irritation
May cause an allergic skin reaction
Causes serious eye irritation

Precautionary statements

Prevention • Avoid breathing dust, fume, gas, mist, vapors and/or spray.
Wash thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/protective clothing/eye protection/face protection.

Response • IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment, see supplemental first aid information.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash before reuse.

Storage/Disposal • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

OSHA HCS 2012 • No data available

Canada

According to: WHMIS 2015

2.1 Classification of the substance or mixture

WHMIS 2015 • Skin Irritation 2
Skin Sensitization 1
Eye Irritation 2

2.2 Label elements

WHMIS 2015

WARNING



- Hazard statements**
- Causes skin irritation
 - May cause an allergic skin reaction
 - Causes serious eye irritation

Precautionary statements

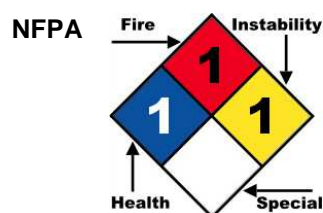
- Prevention**
- Avoid breathing dust, fume, gas, mist, vapors and/or spray.
 - Wash thoroughly after handling.
 - Contaminated work clothing should not be allowed out of the workplace.
 - Wear protective gloves/protective clothing/eye protection/face protection.
- Response**
- IF ON SKIN: Wash with plenty of water and soap.
 - If skin irritation or rash occurs: Get medical advice/attention.
 - Specific treatment, see supplemental first aid information.
 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - If eye irritation persists: Get medical advice/attention.
 - Take off contaminated clothing and wash it before reuse.

- Storage/Disposal**
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

WHMIS 2015 • No data available

2.4 Other information



See Section 12 for Ecological Information.

Section 3 - Composition/Information on Ingredients

3.1 Substances

3.2 Mixtures

Composition				
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive
Acrylate oligomers		17.5%	NDA	CLP / GHS / OSHA / WHMIS: Skin Sens. 1
Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	CAS:28961-43-5	5% TO 6%	Skin-Rabbit LD50 • >13 g/kg	CLP / GHS / OSHA / WHMIS: Skin Sens. 1
Isopropyl alcohol	CAS:67-63-0 EC Number:200-661-7 UN:UN1219 EINECS:200-661-7	< 5%	Inhalation-Rat LC50 • 16000 ppm 8 Hour(s) Skin-Rabbit LD50 • 12800 mg/kg Ingestion/Oral-Rat LD50 • 5000 mg/kg	CLP / GHS / OSHA / WHMIS: Flam Liq. 2; Eye Irrit. 2; STOT SE 3
Benzophenone	CAS:119-61-9 EINECS:204-337-6	< 2%	Ingestion/Oral-Rat LD50 • >10 g/kg Skin-Rabbit LD50 • 3535 mg/kg	CLP / GHS: Skin Irrit. 2; Eye Irrit. 2; Aquatic Acute 1; Aquatic Chronic 1 OSHA / WHMIS: Skin Irrit. 2; Eye Irrit. 2
1-hydroxycyclohexyl phenyl ketone	CAS:947-19-3 EC Number:213-426-9	< 2%		CLP / GHS / OSHA / WHMIS: Acute Tox. 5; Skin Irrit. 2; Eye Irrit. 2

	EINECS:213-426-9			
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	CAS:119313-12-1 EC Number:404-360-3	< 1%	Ingestion/Oral-Rat LD50 • >2000 mg/kg Skin-Rat LD50 • >=2000 mg/kg	CLP / GHS: Aquatic Acute 1; Aquatic Chronic 1 OSHA HCS 2012: WHMIS 2015:

See Section 11 for Toxicological Information.

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation**
- IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Call 911 or emergency medical service.
- Skin**
- IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice/attention.
- Eye**
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
- Ingestion**
- If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Rinse mouth. Never give anything by mouth to an unconscious person. If large quantities are swallowed, call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

4.4 Other information

- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media

- SMALL FIRES: Dry chemical, CO₂, water spray or regular foam.
- LARGE FIRE: Water spray, fog or regular foam.

Unsuitable Extinguishing Media

- No data available

Firefighting Procedures

- Fire fighters should wear complete protective clothing including self-contained breathing apparatus.
- Keep unauthorized personnel away.
- Ventilate closed spaces before entering.
- LARGE FIRES: Use extinguishing agent suitable for type of surrounding fire.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

- Some of these materials may burn, but none ignite readily.

Hazardous Combustion Products

- Products of combustion include: carbon oxides (CO_x), nitrogen oxides (NO_x).

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Wear positive pressure self-contained breathing apparatus (SCBA).

5.4 Other information

- Runoff may pollute waterways

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal Precautions** • Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Contact may irritate or burn skin and eyes.
- Emergency Procedures** • No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.

6.2 Environmental precautions

- LARGE SPILLS: Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

- Containment/Clean-up Measures** • Use appropriate Personal Protective Equipment (PPE)
Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in suitable container.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

- Handling** • Use good safety and industrial hygiene practices. Do not expose to sunlight or white room light. Handle under yellow room lights to prevent polymerization due to UV exposure.

7.2 Conditions for safe storage, including any incompatibilities

- Storage** • Keep container closed when not in use. Store away from extreme heat. Do not freeze. Ventilate enclosed areas.

- Special Packaging Materials** • Package in opaque containers and/or use additional light-blocking materials.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Argentina	Australia	Belgium	Brazil
Isopropyl alcohol (67-63-0)	STELs	400 ppm STEL	500 ppm STEL [CMP-CPT]	500 ppm STEL; 1230 mg/m ³ STEL	400 ppm STEL; 1000 mg/m ³ STEL	Not established
	TWAs	200 ppm TWA	400 ppm TWA [CMP]	400 ppm TWA; 983 mg/m ³ TWA	200 ppm TWA; 500 mg/m ³ TWA	310 ppm TWA LT; 765 mg/m ³ TWA LT
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Alberta	Canada British Columbia	Canada Manitoba	Canada New Brunswick	Canada Northwest Territories
Isopropyl alcohol (67-63-0)	STELs	400 ppm STEL; 984 mg/m ³ STEL	400 ppm STEL	400 ppm STEL	500 ppm STEL; 1230 mg/m ³ STEL	500 ppm STEL; 1228 mg/m ³ STEL
	TWAs	200 ppm TWA; 492 mg/m ³ TWA	200 ppm TWA	200 ppm TWA	400 ppm TWA; 983 mg/m ³ TWA	400 ppm TWA; 983 mg/m ³ TWA
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Nova Scotia	Canada Nunavut	Canada Ontario	Canada Quebec	Canada Saskatchewan
Isopropyl alcohol (67-63-0)	STELs	400 ppm STEL	500 ppm STEL; 1228 mg/m ³ STEL	400 ppm STEL	500 ppm STEV; 1230 mg/m ³ STEV	400 ppm STEL

	TWAs	200 ppm TWA	400 ppm TWA; 983 mg/m3 TWA	200 ppm TWA	400 ppm TWAEV; 985 mg/m3 TWAEV	200 ppm TWA
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Yukon	Chile	China	Denmark	Egypt
Isopropyl alcohol (67-63-0)	STELs	500 ppm STEL; 1225 mg/m3 STEL	500 ppm STEL LPT; 1230 mg/m3 STEL LPT	700 mg/m3 STEL	Not established	500 ppm STEL; 1230 mg/m3 STEL
	TWAs	400 ppm TWA; 980 mg/m3 TWA	320 ppm TWA LPP; 786 mg/m3 TWA LPP	350 mg/m3 TWA	200 ppm TWA; 490 mg/m3 TWA	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Finland	France	Germany DFG	Germany TRGS	Hong Kong
Isopropyl alcohol (67-63-0)	STELs	250 ppm STEL; 620 mg/m3 STEL	400 ppm STEL [VLCT]; 980 mg/m3 STEL [VLCT]	Not established	Not established	500 ppm STEL; 1230 mg/m3 STEL
	TWAs	200 ppm TWA; 500 mg/m3 TWA	Not established	Not established	200 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 500 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	Not established
	Ceilings	Not established	Not established	400 ppm Peak; 1000 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	200 ppm TWA MAK; 500 mg/m3 TWA MAK	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Indonesia	Ireland	Japan	Korea	Mexico
Isopropyl alcohol (67-63-0)	Ceilings	Not established	Not established	400 ppm Ceiling; 980 mg/m3 Ceiling	Not established	Not established
	STELs	Not established	400 ppm STEL	Not established	400 ppm STEL; 980 mg/m3 STEL	500 ppm STEL [LMPE-CT]; 1225 mg/m3 STEL [LMPE-CT]
	TWAs	400 ppm TWA; 983 mg/m3 TWA	200 ppm TWA	Not established	200 ppm TWA; 480 mg/m3 TWA	400 ppm TWA LMPE-PPT; 980 mg/m3 TWA LMPE-PPT
Exposure Limits/Guidelines (Con't.)						
	Result	New Zealand	NIOSH	Norway	OSHA	Philippines
Isopropyl alcohol (67-63-0)	TWAs	400 ppm TWA; 983 mg/m3 TWA	400 ppm TWA; 980 mg/m3 TWA	100 ppm TWA; 245 mg/m3 TWA	400 ppm TWA; 980 mg/m3 TWA	400 ppm TWA; 980 mg/m3 TWA
	STELs	500 ppm STEL; 1230 mg/m3 STEL	500 ppm STEL; 1225 mg/m3 STEL	Not established	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Poland	Portugal	Russia	Singapore	South Africa
Isopropyl alcohol (67-63-0)	STELs	1200 mg/m3 STEL [NDSCh]	400 ppm STEL [VLE-CD]	50 mg/m3 STEL (vapor)	500 ppm STEL; 1230 mg/m3 STEL	500 ppm STEL; 1225 mg/m3 STEL
	TWAs	900 mg/m3 TWA [NDS]	200 ppm TWA [VLE-MP]	10 mg/m3 TWA (vapor)	400 ppm PEL; 983 mg/m3 PEL	400 ppm TWA; 960 mg/m3 TWA; 980 mg/m3 TWA

						(regulated under Propane-2-ol)
Exposure Limits/Guidelines (Con't.)						
	Result	Spain	Sweden	Switzerland	Taiwan	Venezuela
Isopropyl alcohol (67-63-0)	MAKs	Not established	Not established	200 ppm TWA [MAK]; 500 mg/m3 TWA [MAK]	Not established	Not established
	STELs	400 ppm STEL [VLA-EC]; 1000 mg/m3 STEL [VLA-EC]	250 ppm STV; 600 mg/m3 STV	400 ppm STEL [KZW]; 1000 mg/m3 STEL [KZW]	Not established	500 ppm STEL [LEB]
	TWAs	200 ppm TWA [VLA-ED] (it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary o biocide compound); 500 mg/m3 TWA [VLA-ED] (it is prohibited the partial or complete commercialization or use of this substance as a phytosanitary o biocide compound)	150 ppm LLV; 350 mg/m3 LLV	Not established	400 ppm TWA; 983 mg/m3 TWA	400 ppm TWA [CAP]
	Biological Limit Values (BLV)	40 mg/L urine end of workweek Acetone (1,F,I)	Not established	Not established	Not established	Not established

Exposure Control Notations

Switzerland

•Isopropyl alcohol (67-63-0): **Developmental Risk Groups:** (Developmental Risk Group C)

Portugal

•Isopropyl alcohol (67-63-0): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Singapore

•Isopropyl alcohol (67-63-0): **Odour Threshold - High:** (490 mg/m3) | **Odour Threshold - Low:** (8 mg/m3) | **Irritation:** (490 mg/m3)

South Africa

•Isopropyl alcohol (67-63-0): **Skin:** (Skin Notation)

Brazil

•Isopropyl alcohol (67-63-0): **Skin:** (skin designation)

Ireland

•Isopropyl alcohol (67-63-0): **Skin:** (Potential for cutaneous absorption)

ACGIH

•Isopropyl alcohol (67-63-0): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Germany DFG

•Isopropyl alcohol (67-63-0): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

Exposure Limits Supplemental

Switzerland

•Isopropyl alcohol (67-63-0): **Biological Limit Values:** (25 mg/L Medium: urine Time: end of shift Parameter: Acetone; 25 mg/L Medium: whole blood Time: end of shift Parameter: Acetone)

Argentina

•Isopropyl alcohol (67-63-0): **BEIs:** (2 mg/g Creatinine urine Acetone)

ACGIH

•Isopropyl alcohol (67-63-0): **BEIs:** (40 mg/L Medium: urine Time: end of shift at end of workweek Parameter: Acetone (background, nonspecific)) | **TLV Basis - Critical Effects:** (CNS impairment; eye and upper respiratory tract irritation)

Germany TRGS

•Isopropyl alcohol (67-63-0): **BEIs:** (50 mg/L Medium: whole blood Time: end of shift Parameter: Acetone; 50 mg/L Medium: urine Time: end of shift Parameter: Acetone)

8.2 Exposure controls

Engineering Measures/Controls

- Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values.

Personal Protective Equipment

Pictograms



Respiratory

- In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face

- Wear protective eyewear (goggles, face shield, or safety glasses).

Hands

- Wear protective gloves - rubber or neoprene.

Skin/Body

- Wear protective clothing - apron or other impervious body coverings.

General Industrial Hygiene Considerations

- Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling.

Environmental Exposure Controls

- No data available

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Viscous liquid.
Color	Purple or blue	Odor	Isopropanol
Odor Threshold	No data available	Physical and Chemical Properties	UV reactive
General Properties			
Boiling Point	82 °C(180 °F)	Melting Point/Freezing Point	No data available
Decomposition Temperature	Not relevant	pH	4.5-5
Specific Gravity/Relative Density	Not relevant	Density	8.9 lbs/gal
Water Solubility	Miscible	Viscosity	5200 to 9600 Centipoise (cPs, cP) or mPas @ 25 °C(77 °F)
Explosive Properties	Not relevant	Oxidizing Properties:	Not relevant
Volatility			
Vapor Pressure	Not relevant	Vapor Density	>1 Air = 1
Evaporation Rate	<1 Water = 1	VOC (Wt.)	< 5 %
Volatiles (Wt.)	55 to 60 %		
Flammability			
Flash Point	> 82 °C(> 179.6 °F)	UEL	Not relevant
LEL	Not relevant	Autoignition	Not relevant
Flammability (solid, gas)	Not relevant		
Environmental			
Half-Life	No data available	Octanol/Water Partition coefficient	No data available
Coefficient of water/oil distribution	No data available	Bioaccumulation Factor	No data available
Bioconcentration Factor	No data available	Biochemical Oxygen Demand BOD/BOD5	No data available
Chemical Oxygen Demand	No data available	Persistence	No data available
Degradation	No data available		

9.2 Other Information

- No data available

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- UV reactive.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Avoid freezing. Direct sunlight. Excess heat.

10.5 Incompatible materials

- Oxidizers

10.6 Hazardous decomposition products

- Hazardous decomposition products formed under fire conditions - carbon oxides, nitrogen oxides. No decomposition is expected under normal storage and use conditions.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate (5% TO 6%)	28961-43-5	Acute Toxicity: Skin-Rabbit LD50 • >13 g/kg; Irritation: Eye-Rabbit • 100 mg • Moderate irritation; Skin-Rabbit • 500 mg • Moderate irritation
Isopropyl alcohol (< 5%)	67-63-0	Acute Toxicity: Ingestion/Oral-Rat LD50 • 5000 mg/kg; <i>Behavioral:General anesthetic</i> ; Inhalation-Rat LC50 • 16000 ppm 8 Hour(s); Skin-Rabbit LD50 • 12800 mg/kg; Irritation: Eye-Rabbit • 100 mg 24 Hour(s) • Moderate irritation
Benzophenone (< 2%)	119-61-9	Acute Toxicity: Ingestion/Oral-Rat LD50 • >10 g/kg; Skin-Rabbit LD50 • 3535 mg/kg
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) (< 1%)	119313-12-1	Acute Toxicity: Ingestion/Oral-Rat LD50 • >2000 mg/kg; Skin-Rat LD50 • >=2000 mg/kg

GHS Properties	Classification
Skin corrosion/Irritation	EU/CLP •Skin Irritation 2 UN GHS 7 •Skin Irritation 2 OSHA HCS 2012 •Skin Irritation 2 WHMIS 2015 •Skin Irritation 2
Serious eye damage/Irritation	EU/CLP •Eye Irritation 2 UN GHS 7 •Eye Irritation 2 OSHA HCS 2012 •Eye Irritation 2 WHMIS 2015 •Eye Irritation 2
Skin sensitization	EU/CLP •Skin Sensitizer 1 UN GHS 7 •Skin Sensitizer 1 OSHA HCS 2012 •Skin Sensitizer 1 WHMIS 2015 •Skin Sensitizer 1

Potential Health Effects

Inhalation

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- Repeated and prolonged exposure may cause irritation.

Skin

Acute (Immediate)

- May cause irritation. May cause an allergic skin reaction.

Chronic (Delayed)

- Repeated and prolonged exposure may cause irritation. Repeated and prolonged exposure may cause sensitization.

Eye

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- Repeated and prolonged exposure may cause irritation.

Ingestion

- Acute (Immediate)** • No data available
Chronic (Delayed) • No data available

Section 12 - Ecological Information

12.1 Toxicity

Components		
Benzophenone (< 2%)	119-61-9	Aquatic Toxicity-Fish: 96 Hour(s) LC50 <i>fathead minnow</i> 14.2 mg/L Aquatic Toxicity-Crustacea: 24 Hour(s) EC50 <i>Daphnia magna</i> 0.28 mg/L
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) (< 1%)	119313-12-1	Aquatic Toxicity-Fish: 96 Hour(s) LC50 <i>Brachydanio rerio</i> 0.46 mg/L Aquatic Toxicity-Crustacea: 24 Hour(s) EC50 Water Flea <i>Daphnia magna</i> >0.8 mg/L

12.2 Persistence and degradability

- No data available

12.3 Bioaccumulative potential

- No data available

12.4 Mobility in Soil

- No data available

12.5 Results of PBT and vPvB assessment

- No data available

12.6 Other adverse effects

Section 13 - Disposal Considerations

13.1 Waste treatment methods

- Product waste** • Dispose of content in accordance with local, regional, national, and/or international regulations.
- Packaging waste** • Dispose of container in accordance with local, regional, national, and/or international regulations.

13.2 Other Information

- Avoid release to the environment. Dispose of wastes in an approved waste disposal facility.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	NDA	NDA	NDA	NDA
IMO/IMDG	NDA	NDA	NDA	NDA	NDA
IATA/ICAO	NDA	NDA	NDA	NDA	NDA

- 14.6 Special precautions for user** • None specified.
- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** • Not relevant.
- 14.8 Other information**

DOT • Not regulated.
 IMO/IMDG • Not regulated.
 IATA/ICAO • Not regulated.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications • Acute

State Right To Know				
Component	CAS	MA	NJ	PA
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	No	No	No
1-hydroxycyclohexyl phenyl ketone	947-19-3	No	No	No
Benzophenone	119-61-9	No	No	No
Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	No	No	No
Isopropyl alcohol	67-63-0	Yes	Yes	Yes

Inventory						
Component	CAS	Australia AICS	Canada DSL	China	EU EINECS	EU ELNICS
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Yes	Yes	Yes	No	Yes
1-hydroxycyclohexyl phenyl ketone	947-19-3	Yes	Yes	Yes	Yes	No
Benzophenone	119-61-9	Yes	Yes	Yes	Yes	No
Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Yes	Yes	Yes	No	No
Isopropyl alcohol	67-63-0	Yes	Yes	Yes	Yes	No

Inventory (Con't.)						
Component	CAS	Japan ENCS	Korea KECL	New Zealand	Philippines PICCS	Switzerland SWISS
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Yes	No	Yes	Yes	Yes
1-hydroxycyclohexyl phenyl ketone	947-19-3	Yes	Yes	Yes	Yes	No
Benzophenone	119-61-9	Yes	Yes	Yes	Yes	No
Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Yes	Yes	Yes	Yes	Yes
Isopropyl alcohol	67-63-0	Yes	Yes	Yes	Yes	No

Inventory (Con't.)		
Component	CAS	TSCA
1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Yes
1-hydroxycyclohexyl phenyl ketone	947-19-3	Yes
Benzophenone	119-61-9	Yes
Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Yes
Isopropyl alcohol	67-63-0	Yes

Australia

Labor

Australia - High Volume Industrial Chemicals List

•Isopropyl alcohol	67-63-0	
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed

•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed
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Environment

Australia - Priority Existing Chemical Program

•Isopropyl alcohol	67-63-0	Candidate chemical
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Canada Alberta

Environment

Canada - Alberta - Ambient Air Quality Objectives

•Isopropyl alcohol	67-63-0	3190 ppbv 1 hour average; 7850 µg/m3 1 hour average
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

China

Other

China - Dangerous Goods List

•Isopropyl alcohol	67-63-0	
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Europe

Other

EU - Endocrine Disrupters (COM (2001)262) - Candidate List of Substances

•Isopropyl alcohol	67-63-0	Not Listed
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Group III Chemical
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

EU - No-Longer Polymers List (67/548/EEC)

•Isopropyl alcohol	67-63-0	Not Listed
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	NLP No. 500-066-5 (>1<6.5 mol ethoxylated units)
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Germany

Environment

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

•Isopropyl alcohol	67-63-0	ID Number 135, hazard class 1 - low hazard to waters
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

•Isopropyl alcohol	67-63-0	Not Listed
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	ID Number 8454, hazard class 1 - low hazard to waters (1 - 6.5 moles ethoxylated)
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	ID Number 2024, hazard class 2 - hazard to waters
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	ID Number 2102, hazard class 2 - hazard to waters

Hong Kong

Labor

Hong Kong - Dangerous Substances Regulations - Classification

•Isopropyl alcohol	67-63-0	Flammable (listed under Propanol, all isomers)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Other

Hong Kong - Dangerous Goods - Category 5 - Substances Giving Off Flammable Vapour

•Isopropyl alcohol	67-63-0	Class 1, Division 2
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

India

Environment

India - Hazardous Chemical Rules - List of Hazardous and Toxic Chemicals

•Isopropyl alcohol	67-63-0	
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan

Labor

Japan - ISHL Dangerous Substances

•Isopropyl alcohol	67-63-0	Flammable substance (listed under Substances whose flash points are $\geq 0^{\circ}\text{C}$ and $< 30^{\circ}\text{C}$)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan - ISHL Harmful Substances Requiring Workers to Subject to Medical Exams

•Isopropyl alcohol	67-63-0	(when produced and handled indoors, [Table 6-2-03])
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan - ISHL Harmful Substances Whose Names Are to be Indicated on the Label

•Isopropyl alcohol	67-63-0	≥ 1 % weight ([494], listed under Propyl alcohol)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan - ISHL Notifiable Substances

•Isopropyl alcohol	67-63-0	≥ 0.1 % weight ([494], listed under Propyl alcohol)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan - ISHL Prevention of Organic Solvent Poisoning

•Isopropyl alcohol	67-63-0	Class 2 Organic Solvent
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed

•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed
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Environment

Japan - Pollutant Release Transfer Register (PRTR) - Class 1 Substances

•Isopropyl alcohol	67-63-0	Not Listed
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	403 >=1 %
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Inventory - Japan - Industrial Safety and Health Law Substances (ISHL)

•Isopropyl alcohol	67-63-0	2-(8)-319; (2)-207 (ENCS inventory number, considered an existing substance based on the Industrial Safety and Health Law) 10-2718; (7)-708 (ENCS inventory number, considered an existing substance based on the Industrial Safety and Health Law, listed under Alkyl or alkenyl (C1-21, 34 each) poly (n=1-2) carboxylic acid/alkyl or alkenyl (C1-40) poly (n=1-6) alcohol polycondensate)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	
•1-hydroxycyclohexyl phenyl ketone	947-19-3	7-(4)-697 (4)-125, (4)-124, (3)-1258 (ENCS inventory number, considered an existing substance based on the Industrial Safety and Health Law)
•Benzophenone	119-61-9	
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	8-(7)-927

Other

Japan - Chemical Substance Control Law (CSCL) - Examined Existing Chemical Substances

•Isopropyl alcohol	67-63-0	Readily biodegradable ([2-207])
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Non-biodegradable/Low bioconcentration ([3-1258, 4-125])
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan - Fire Service Law - Hazardous Materials

•Isopropyl alcohol	67-63-0	Group 4 Flammable liquids; Alcohols - soluble; Hazard rank II
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Japan - ISHL Working Environment Evaluation Standards - Administrative Control Levels

•Isopropyl alcohol	67-63-0	200 ppm ACL
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Korea

Labor

Korea - ISHA - Name, Toxicity and Protective Measures of New Chemical Substances

•Isopropyl alcohol	67-63-0	Not Listed
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed

•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) 119313-12-1 94-20 (0055)

Singapore

Environment

Singapore - Petroleum and Flammable Materials - Hazard Classes

•Isopropyl alcohol	67-63-0	3 (listed under Flammable material)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

Singapore - Petroleum and Flammable Materials - Regulated Products

•Isopropyl alcohol	67-63-0	SCDIPA1219L2 (listed under Flammable material)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

United States

Environment

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

•Isopropyl alcohol	67-63-0	1.0 % de minimis concentration (only if manufactured by the strong acid process, no supplier notification)
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

•Isopropyl alcohol	67-63-0	Not Listed
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	carcinogen, 6/22/2012
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

•Isopropyl alcohol	67-63-0	
•Ethanol, 2,2',2''-(propylidynetris(methyleneoxy))tri-, triacrylate	28961-43-5	Not Listed
•1-hydroxycyclohexyl phenyl ketone	947-19-3	Not Listed
•Benzophenone	119-61-9	Not Listed
•1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl)	119313-12-1	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

15.3 Other Information

- California Proposition 65: This product can expose you to chemicals known to the State of California to cause cancer:
 Benzophenone CAS No. 119-61-9 1-2%
 1,4-Dioxane CAS No. 123-91-1 <0.0001%

Section 16 - Other Information

Relevant Phrases (code & full text)

- H315 - Causes skin irritation
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H401 - Toxic to aquatic life
- H412 - Harmful to aquatic life with long lasting effects
- EUH208 - Contains sensitizing substance. May produce an allergic reaction.
- P261 - Avoid breathing dust, fume, gas, mist, vapors and/or spray.
- P264 - Wash thoroughly after handling.
- P272 - Contaminated work clothing should not be allowed out of the workplace.
- P273 - Avoid release to the environment.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P321 - Specific treatment, see supplemental first aid information.
- P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
- P337+P313 - If eye irritation persists: Get medical advice/attention.
- P362 - Take off contaminated clothing and wash before reuse.
- P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Classification method for mixtures

- Calculation method.

Revision Date

- No data available

Last Revision Date

- 03 August 2018

Preparation Date

- 05 October 2018

Other Information

- Approved by: Troy Bergstedt, Director of Chemical Research, (218) 628-2217 ext.142.

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