

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

1.1 Product identifier

Product Name • ALPHA E-20 Emulsion

Product Description • 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 EU Directive 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

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

DSD/DPD • Irritant (Xi)
Sensitizer
R36, R37, R38, R43, R53

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 substances (2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester; Acrylic acid, propylenebis(oxypropylene) ester; Pentaerythritol Tetraacrylate). 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.
 - P362 - Take off contaminated clothing and wash before reuse.
 - 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.
 - P321 - Specific treatment, see supplemental first aid information.

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

DSD/DPD



- Risk phrases**
- R36 - Irritating to eyes.
 - R37 - Irritating to respiratory system.
 - R38 - Irritating to skin.
 - R43 - May cause sensitization by skin contact.
 - R53 - May cause long-term adverse effects in the aquatic environment.

- Safety phrases**
- S24 - Avoid contact with skin.
 - S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 - S37 - Wear suitable gloves.
 - S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 - S57 - Use appropriate containment to avoid environmental contamination.

2.3 Other Hazards

- CLP**
- No data available
- DSD/DPD**
- No data available

UN GHS

According to Third Revised Edition

2.1 Classification of the substance or mixture

- UN GHS**
- Skin Irritation 2 - H315
 - Skin Sensitization 1 - H317
 - Eye Irritation 2 - H319
 - Hazardous to the aquatic environment Chronic 3 - H412

2.2 Label elements

UN GHS

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.

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.
 - P362 - Take off contaminated clothing and wash before reuse.
 - 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.
 - P321 - Specific treatment, see supplemental first aid information.

- Storage/Disposal**
- P501 - 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 - H315
 - Skin Sensitization 1 - H317
 - Eye Irritation 2 - H319
- OSHA HCS 1994**
- Irritant

2.2 Label elements

OSHA HCS 2012

WARNING



- Hazard statements**
- H315 - Causes skin irritation.
 - H317 - May cause an allergic skin reaction.
 - H319 - Causes serious eye irritation.

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.
 P362 - Take off contaminated clothing and wash before reuse.
 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.
 P321 - Specific treatment, see supplemental first aid information.

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

OSHA HCS 1994 • Irritant

2.3 Other hazards

OSHA HCS 2012 • No data available

OSHA HCS 1994 • No data available

Canada According to WHMIS

2.1 Classification of the substance or mixture

WHMIS • Other Toxic Effects - D2B

2.2 Label elements

WHMIS

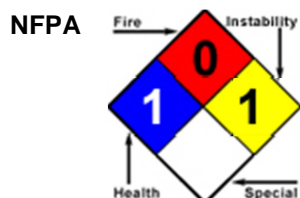


• Other Toxic Effects - D2B

2.3 Other hazards

WHMIS • No data available

2.4 Other information



Key to abbreviations

= See Section 16 for full text of R and S phrases.

See Section 12 for Ecological Information.

Section 3 - Composition/Information on Ingredients

3.1 Substances

3.2 Mixtures

| Hazardous Components | | | | | |
|---|--|---------------|---|---|----------|
| Chemical Name | Identifiers | %(weight) | LD50/LC50 | Classifications According to Regulation/Directive | Comments |
| 2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | CAS:3524-68-3 EC Number:222-540-8 EINECS:222-540-8 | 10% TO 15% | Ingestion/Oral- Rat LD50 • 1830 mg/kg Skin-Rabbit LD50 • 4 mL/kg | OSHA HCS 1994: WHMIS: UN GHS: Skin Irrit. 2; Skin Sens. 1 EU DSD/DPD: Irritant(Xi); R36/38; R43 EU CLP: OSHA HCS 2012: | |

| | | | | |
|--|---|---------------|---|--|
| Acrylic acid, propylenebis(oxypropylene) ester | CAS: 42978-66-5 EC Number: 256-032-2 EINECS: 256-032-2 | 10% TO 15% | Ingestion/Oral- Rat LD50 • 6200 mg/kg Skin-Rabbit LD50 • >2 g/kg | OSHA HCS 1994: WHMIS: UN GHS: Aquatic Chronic 2; Eye Irrit. 2A; Skin Irrit. 2; Skin Sens. 1; STOT SE 3: Resp. Irrit. EU DSD/DPD: Environment(N); Irritant(Xi); R36/37/38; R43; R51; R53 EU CLP: OSHA HCS 2012: |
| Pentaerythritol Tetraacrylate | CAS: 4986-89-4 EC Number: 225-644-1 EINECS: 225-644-1 | < 3% | | OSHA HCS 1994: WHMIS: UN GHS: Eye Irrit. 2A; Skin Irrit. 2; Skin Sens. 1 EU DSD/DPD: Irritant(Xi); R36/38; R43 EU CLP: OSHA HCS 2012: |
| Benzophenone | CAS: 119-61-9 EINECS: 204-337-6 | < 1% | Ingestion/Oral- Rat LD50 • >10 g/kg Skin-Rabbit LD50 • 3535 mg/kg | OSHA HCS 1994: Irrit. WHMIS: Other Toxic Effects - D2B UN GHS: Aquatic Acute 1; Aquatic Chronic 1; Eye Irrit. 2A; Skin Irrit. 3 EU DSD/DPD: R36/38; R50/53 EU CLP: Aquatic Acute 1; Aquatic Chronic 1; Eye Irrit. 2; Skin Irrit. 2 OSHA HCS 2012: |
| 1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | CAS: 119313-12-1 EC Number: 404-360-3 | < 0.4% | Ingestion/Oral- Rat LD50 • >2000 mg/kg Skin-Rat LD50 • >=2000 mg/kg | OSHA HCS 1994: WHMIS: UN GHS: Aquatic Acute 1; Aquatic Chronic 1 EU DSD/DPD: Environment(N); R50; R53 EU CLP: Aquatic Acute 1; Aquatic Chronic 1 OSHA HCS 2012: |

Key to abbreviations

= See Section 16 for full text of R and S phrases.

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 and call 911 or emergency medical service.

Skin

- IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.

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

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 • No data available

Extinguishing Media

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

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 (COx).

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).

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. Ventilate enclosed areas.

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.

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.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

8.2 Exposure controls

Engineering Measures/Controls • Local exhaust is recommended but not required. Provide adequate ventilation as necessary.

Personal Protective Equipment

Pictograms



Respiratory • Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

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.

Environmental Exposure Controls • No data available

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

| Material Description | | | |
|---------------------------------------|--|-------------------------------------|-------------------|
| Physical Form | Liquid | Appearance/Description | Viscous liquid |
| Color | Blue | Odor | Mild |
| Odor Threshold | No data available | | |
| General Properties | | | |
| Boiling Point | 100 C(212 F) | Melting Point | No data available |
| Decomposition Temperature | Not relevant | pH | No data available |
| Density | 8.71 lbs/gal | Water Solubility | Miscible |
| Viscosity | 9000-12,000 Centipoise (cPs, cP) or mPas @ 25 C (77 F) | Explosive Properties | Not relevant |
| Oxidizing Properties: | Not relevant | | |
| Volatility | | | |
| Vapor Pressure | Not relevant | Vapor Density | Not relevant |
| Evaporation Rate | No data available | VOC (Wt.) | Not relevant |
| Volatiles (Wt.) | 61 to 71 % | | |
| Flammability | | | |
| Flash Point | > 200 F(> 93.3333 C) | 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

- Polymerizes to solid/semisolid form upon exposure to UV radiation.

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. Excess heat.

10.5 Incompatible materials

- No data available

10.6 Hazardous decomposition products

- No decomposition is expected under normal storage and use conditions. Hazardous decomposition products formed under fire conditions - carbon oxides (COx).

Section 11 - Toxicological Information

11.1 Information on toxicological effects

| Component Name | CAS | Data |
|--|-------------|---|
| 2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester (10% TO 15%) | 3524-68-3 | Acute Toxicity: orl-rat LD50:1830 mg/kg; skn-rbt LD50:4 mL/kg; Irritation: eye-rbt 1 mg SEV; skn-rbt 500 mg open MLD; Reproductive: orl-rat TDLo:500 mg/kg (6-15D preg); Tumorigen/Carcinogen: skn-mus TDLo:16 gm/kg/80W-I |
| Acrylic acid, propylenebis(oxypropylene) ester (10% TO 15%) | 42978-66-5 | Acute Toxicity: orl-rat LD50:6200 mg/kg; skn-rbt LD50:>2 gm/kg; Irritation: eye-rbt 100 uL/24H SEV; skn-rbt 500 mg MOD; Reproductive: orl-rat TDLo:1 gm/kg (6-15D preg) |
| Benzophenone (< 1%) | 119-61-9 | Acute Toxicity: orl-rat LD50:>10 gm/kg; Skin-Rabbit LD50 • 3535 mg/kg; Reproductive: orl-rat TDLo:4200 mg/kg (6-19D preg) |
| 1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) (< 0.4%) | 119313-12-1 | Acute Toxicity: Ingestion/Oral-Rat LD50 • >2000 mg/kg; Skin-Rat LD50 • >=2000 mg/kg |

| GHS Properties | Classification |
|---------------------------|---|
| Acute toxicity | EU/CLP• OSHA HCS 2012• UN GHS• |
| Aspiration Hazard | EU/CLP• OSHA HCS 2012• UN GHS• |
| Carcinogenicity | EU/CLP• OSHA HCS 2012• UN GHS• |
| Germ Cell Mutagenicity | EU/CLP• OSHA HCS 2012• UN GHS• |
| Skin corrosion/Irritation | EU/CLP•Skin Irritation 2 OSHA HCS 2012•Skin Irritation 2 UN GHS•Skin Irritation 2 |
| Skin sensitization | EU/CLP•Skin Sensitizer 1 |

| | |
|-------------------------------|---|
| | OSHA HCS 2012•Skin Sensitizer 1 UN GHS•Skin Sensitizer 1 |
| STOT-RE | EU/CLP• OSHA HCS 2012• UN GHS• |
| STOT-SE | EU/CLP• OSHA HCS 2012• UN GHS• |
| Toxicity for Reproduction | EU/CLP• OSHA HCS 2012• UN GHS• |
| Respiratory sensitization | EU/CLP• OSHA HCS 2012• UN GHS• |
| Serious eye damage/Irritation | EU/CLP•Eye Irritation 2 OSHA HCS 2012•Eye Irritation 2 UN GHS•Eye Irritation 2A |

Route(s) of entry/exposure • Skin, Eye

Potential Health Effects

Inhalation

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- Repeated and prolonged exposure may cause irritation.

Skin

Acute (Immediate)

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

Chronic (Delayed)

- Repeated and prolonged exposure may cause sensitization.

Eye

Acute (Immediate)

- Causes serious eye irritation.

Chronic (Delayed)

- Repeated and prolonged exposure may be harmful.

Ingestion

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- No specific information available.

| Carcinogenic Effects | | | |
|----------------------|----------|------------------------------|-----------------------------|
| | CAS | IARC | NTP |
| Benzophenone | 119-61-9 | Group 2B-Possible Carcinogen | Evidence of Carcinogenicity |

Section 12 - Ecological Information

12.1 Toxicity

| Component | CAS | Data | Comments |
|---|-------------|--|----------|
| Benzophenone (< 1%) | 119-61-9 | Crustacea: 24 Hour(s) EC50 Crustacea .28 mg/L ; Fish: 96 Hour(s) LC50 Fish 14.2 mg/L | |
| 1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) (< 0.4%) | 119313-12-1 | Crustacea: 24 Hour(s) EC50 Water Flea .8 mg/L ; Fish: 96 Hour(s) LC50 Fish .46 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

- 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 73/78 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

| Inventory | | | | | | |
|---|-----------|----------------|------------|-------|-----------|-----------|
| Component | CAS | Australia AICS | Canada DSL | China | EU EINECS | EU ELNICS |
| 2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | Yes | Yes | Yes | Yes | No |

| | | | | | | |
|--|-------------|-----|-----|-----|-----|-----|
| Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | Yes | Yes | Yes | Yes | No |
| Pentaerythritol Tetraacrylate | 4986-89-4 | Yes | Yes | Yes | Yes | No |
| Benzophenone | 119-61-9 | Yes | Yes | Yes | Yes | No |
| 1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | Yes | Yes | Yes | No | Yes |

Inventory (Con't.)

| Component | CAS | Japan ENCS | Korea KECL | New Zealand | Philippines PICCS | Switzerland SWISS |
|---|-------------|------------|------------|-------------|-------------------|-------------------|
| 2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | Yes | Yes | Yes | Yes | No |
| Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | Yes | Yes | Yes | Yes | No |
| Pentaerythritol Tetraacrylate | 4986-89-4 | Yes | Yes | Yes | Yes | No |
| Benzophenone | 119-61-9 | Yes | Yes | Yes | Yes | No |
| 1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | Yes | Yes | Yes | Yes | Yes |

Inventory (Con't.)

| Component | CAS | TSCA |
|---|-------------|------|
| 2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | Yes |
| Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | Yes |
| Pentaerythritol Tetraacrylate | 4986-89-4 | Yes |
| Benzophenone | 119-61-9 | Yes |
| 1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | Yes |

Australia

Labor

Australia - High Volume Industrial Chemicals List

| | | |
|--|-------------|-----------------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% Not Listed |
| •Benzophenone | 119-61-9 | < 1% Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% Not Listed |

Australia - List of Designated Hazardous Substances - Classification

| | | | |
|--|-------------|------------|--------------------------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Xi, N R36/37/38, R43, R51, R53 |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Xi R36/38, R43 |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Xi R36/38, R43 |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | N R50, R53 |

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

| | | | |
|--|------------|------------|-----------------------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Xi; R36/37/38 R43 N; R51-53 |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Xi; R36/38 R43 |

| | | | |
|---|-------------|--------|----------------|
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Xi; R36/38 R43 |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | N; R50-53 |

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

| | | | |
|--|-------------|------------|----------------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | 10%≤C: Xi; R36/37/38 |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

| | | | |
|--|-------------|------------|---|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Xi N R:36/37/38-43-51/53 S:(2)-24-37-61 |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Xi R:36/38-43 S:(2)-39 |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Xi R:36/38-43 S:(2)-26-39 |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | N R:50/53 S:60-61 |

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

| | | | |
|--|-------------|------------|------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | D |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | D |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

| | | | |
|--|-------------|------------|----------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | S:(2)-24-37-61 |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | S:(2)-39 |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | S:(2)-26-39 |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | S:60-61 |

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

| | | | |
|--|-------------|------------|--------------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Group III Chemical |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

Germany

Environment

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

| | | | |
|--|-------------|------------|---|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | ID Number 1868, hazard class 2 - hazard to waters |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

Germany - Water Classification (VwVwS) - Annex 3

| | | | |
|--|-------------|------------|---|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | ID Number 2024, hazard class 2 - hazard to waters |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | ID Number 2102, hazard class 2 - hazard to waters |

Japan

Environment

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

| | | | |
|--|-------------|------------|------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | 403 >=1 % |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

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

| | | | |
|--|-------------|------------|---------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | 9-768; 9-2531 |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | 8-(7)-927 |

Other

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

| | | | |
|--|-------------|------------|--|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Non-decomposable/Low-concentrate |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Low-decomposable (see also 4-125); Non-decomposable/Low-concentrate (see also 4-125) |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

Japan - Fire Service Law - Hazardous Materials

| | | | |
|--|-------------|------------|--|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Group 4 - Flammable liquids III (listed under 3rd Class petroleum - insoluble) |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Group 4 - Flammable liquids III (listed under 3rd Class petroleum - insoluble) |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | Not Listed |

Korea

Labor

Korea - MOE - Harmful Substances

| | | | |
|--|-------------|------------|------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | 92-23 |

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

| | | | |
|--|-------------|------------|------------|
| •Acrylic acid, propylenebis(oxypropylene) ester | 42978-66-5 | 10% TO 15% | Not Listed |
| •2-Propenoic acid, 2-(hydroxymethyl)-2-(((1-oxo-2-propenyl)oxy)methyl)-1,3-propanediyl ester | 3524-68-3 | 10% TO 15% | Not Listed |
| •Pentaerythritol Tetraacrylate | 4986-89-4 | < 3% | Not Listed |
| •Benzophenone | 119-61-9 | < 1% | Not Listed |
| •1-Butanone, 2-(dimethylamino)-1-(4-(4-morpholinyl)phenyl)-2-(phenylmethyl) | 119313-12-1 | < 0.4% | 94-20 |

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 contains or may contain a substance(s) known to the State of California to cause cancer and/or reproductive toxicity:

| | | |
|--------------|------------------|-----------|
| Benzophenone | CAS No. 119-61-9 | <1% |
| Formaldehyde | CAS No. 50-00-0 | <0.001% |
| 1,4-Dioxane | CAS No. 123-91-1 | <0.00007% |

Section 16 - Other Information

Relevant Phrases (code & full text)

- EUH208 - Contains sensitizing substances. May produce an allergic reaction.
- 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
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.

R36 - Irritating to eyes.
R37 - Irritating to respiratory system.
R38 - Irritating to skin.
R43 - May cause sensitization by skin contact.
R50 - Very toxic to aquatic organisms.
R51 - Toxic to aquatic organisms.
R53 - May cause long-term adverse effects in the aquatic environment.
S24 - Avoid contact with skin.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 - Wear suitable gloves.
S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S57 - Use appropriate containment to avoid environmental contamination.

Classification method for mixtures

- Calculation method.

Last Revision Date

- 17 August 2012

Preparation Date

- 31 October 2014

Other Information

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

Disclaimer/Statement of Liability

- The information contained herein is based on data available to us and is believed to be correct. Since this information may have been obtained in part from independent laboratories or other sources not under direct supervision, no representation is made that the information is accurate, reliable, complete, or representative and Buyer may rely thereon only at the Buyer's risk. We make no guarantee that the health and safety precautions we have suggested will be adequate for all individuals and / or situations involving its handling and uses. No warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Vendor assumes no responsibility for injury to vendee or third person proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet.