



1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Number 198BEV

Manufacturer Apex Flavors, Inc.
1371 Brass Mill Rd.
Suite A
Belcamp, MD 21017
(410) 565-6600

Product name GUAVA FLAVOR, NATURAL WONF
Pure substance/mixture Mixture

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

Recommended Use No information available

1.3. Details of the supplier of the safety data sheet

For further information, please contact:

E-mail Address cpisano@apexflavors.com

1.4. Emergency telephone number

Emergency telephone Chemtrec: 1-800-424-9300 for US/ 703-527-3887 outside US

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

| | |
|-----------------------------------|-------------|
| Acute dermal toxicity | Category 5 |
| Serious eye damage/eye irritation | Category 2A |
| Acute aquatic toxicity | Category 2 |
| Chronic aquatic toxicity | Category 2 |
| Flammable liquids | Category 3 |

Classification according to EU Directives 67/548/EEC or 1999/45/EC
For the full text of the R-phrases mentioned in this Section, see Section 16

Symbol(s)
Xn - Harmful

R-code(s)
Xn;R21

2.2. Label elements**Signal Word**

Warning

Hazard Statements

H313 - May be harmful in contact with skin

H319 - Causes serious eye irritation

H411 - Toxic to aquatic life with long lasting effects

H226 - Flammable liquid and vapor

Precautionary Statements

P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

2.3. Other information**3. COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substances**

| Chemical Name | EC-No | CAS-No | Alternate CAS # | Weight % | Classification according to Directive 67/548/EEC or 1999/45/EC | Classification according to Regulation (EC) No. 1272/2008 [CLP] | REACH Registration Number |
|------------------|-----------|-----------|-----------------|----------|--|--|---------------------------|
| ETHYL ALCOHOL | Present | 64-17-5 | | 30-50% | F; R11 | Eye Irrit. 1 (H319) (EFFA) Flam. Liq. 2 (H225) (EFFA) Flam. Liq. 2 (H225) | No data available |
| TRIETHYL CITRATE | 201-070-7 | 77-93-0 | | 1-5% | - | No data available | No data available |
| Trade Secret | Listed | - | | <1 | - | Aquatic Acute 2 (H401) (EFFA) Skin Irrit. 3 (316) (EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |
| LIMONENE | 227-813-5 | 5989-27-5 | | <1 | R10, XI; R38, XI; R43, N; R50/53; | Aquatic Acute 1 (H400) Skin Sens. 1 (H317) Skin Irrit. 2 (H316) Asp. Tox. 1 (H304) Aquatic Chronic 1 (H410) Flam. Liq. 3 (H226) | No data available |
| Trade Secret | Listed | - | | <1 | - | Aquatic Acute 3 (H402) Skin Irrit. 2 (H316) Acute Tox. 5 (H303) Flam. Liq. 4 (H227) | No data available |

| | | | | | | | |
|--|-----------|----------|--|----|---|--|-------------------|
| Trade Secret | Listed | - | | <1 | F; R11 Xi; R36 R66 R67 | Eye Irrit. 1 (H319) Flam. Liq. 2 (H225) Flam. Liq. 2 (H225) | No data available |
| Trade Secret | Listed | - | | <1 | R10, XI; R43, N; R50/53, XN; R65; | Aquatic Acute 1 (H400) Skin Sens. 1 (H317) Skin Irrit. 3 (H316) Asp. Tox. 1 (H304) Aquatic Chronic 1 (H410) Acute Tox. 5 (H303) Flam. Liq. 3 (H226) | No data available |
| Trade Secret | Listed | - | | <1 | R10 R66 | Aquatic Acute 3 (H402) Flam. Liq. 3 (H226) | No data available |
| Trade Secret | Listed | - | | <1 | XN; R22; | Aquatic Acute 2 (H401) Skin Irrit. 3 (H316) Acute Tox. 4 (H302) Acute Tox. 5 (H313) Flam. Liq. 4 (H227) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Corr. 1C (314) (EFFA) Eye Dam. 1 (H318) (EFFA) Acute Tox. 4 (H302) (EFFA) Acute Tox. 4 (H312)(EFFA) Flam. Liq. 4 (H227)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Aquatic Acute 2 (H401) (EFFA) Skin Irrit. 3 (316) (EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) Asp. Tox. 1 (H304) (EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Aquatic Acute 2 (H401) (EFFA) Skin Sens. 1 (H317) (EFFA) Skin Irrit. 3 (316) (EFFA) Aquatic Chronic 2 (H411) (EFFA) Acute Tox. 4 (H302) (EFFA) Acute Tox. 3 (H311)(EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Flam. Liq. 3 (H226)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Eye Irrit. 1 (H319) Skin Irrit. 2 (H316) Acute Tox. 5 (H303) Flam. Liq. 4 (H227) | No data available |
| Trade Secret | Listed | - | | <1 | - | Acute Tox. 4 (H302) | No data available |
| Trade Secret | Listed | - | | <1 | Xn; R22 | Acute Tox. 4 (H302) | No data available |
| Trade Secret | Listed | - | | <1 | - | Eye Irrit. 1 (H319) (EFFA) Skin Irrit. 3 (316) (EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) Flam. Liq. 4 (H227)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |
| ACETOIN 96/100% FCC (ACETYL METHYL CARBINOL) | 208-174-1 | 513-86-0 | | <1 | - | Flam. Liq. 3 (H226) | No data available |
| Trade Secret | Listed | - | | <1 | - | Aquatic Acute 3 (H402) (EFFA) Eye Irrit. 1 (H319) (EFFA) Skin Irrit. 3 (316) (EFFA) Flam. Liq. 4 (H227)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Eye Irrit. 1 (H319) (EFFA) Skin Irrit. 3 (316) (EFFA) Acute Tox. 5 (H303)(EFFA) Flam. Liq. 3 (H226)(EFFA) | No data available |

| | | | | | | | |
|--------------|------------|---|--|----|-------------------------------|--|-------------------|
| Trade Secret | Listed | - | | <1 | - | Aquatic Acute 3 (H402) (EFFA) Eye Irrit. 1 (H319) (EFFA) Skin Irrit. 2 (315) (EFFA) Acute Tox. 4 (H302) (EFFA) Flam. Liq. 4 (H227)(EFFA) Aquatic Acute 3 (H402) Eye Irrit. 1 (H319) Acute Tox. 4 (H302) Acute Tox. 5 (H313) | No data available |
| Trade Secret | Listed | - | | <1 | - | Eye Irrit. 1 (H319) Acute Tox. 5 (H303) Eye Irrit. 1 (H319) (EFFA) Acute Tox. 5 (H303)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | XI; R38, XI; R41, XI; R43; | Aquatic Acute 2 (H401) Skin Sens. 1 (H317) Eye Dam. 1 (H318) Skin Irrit. 2 (H316) Acute Tox. 5 (H303) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) Acute Tox. 3 (H301) (EFFA) Flam. Liq. 2 (H225) (EFFA) | No data available |
| Trade Secret | Not Listed | - | | <1 | - | No data available | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | R10, R52/53, XN; R65; | Aquatic Acute 3 (H402) Skin Irrit. 3 (H316) Asp. Tox. 1 (H304) Aquatic Chronic 3 (H412) Flam. Liq. 3 (H226) | No data available |
| Trade Secret | Listed | - | | <1 | - | Flam. Liq. 3 (H226)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | XN; R22 | Skin Irrit. 3 (H316) Acute Tox. 4 (H302) Flam. Liq. 4 (H227) | No data available |
| Trade Secret | Listed | - | | <1 | - | Skin Irrit. 3 (316) (EFFA) Acute Tox. 5 (H303)(EFFA) Flam. Liq. 4 (H227)(EFFA) | No data available |
| Trade Secret | Listed | - | | <1 | XI; R38 | Aquatic Acute 3 (H402) Skin Irrit. 2 (H316) Acute Tox. 5 (H303) Flam. Liq. 4 (H227) | No data available |

For the full text of the R-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1. Description of first aid measures

| | |
|---|--|
| General advice | If symptoms persist, call a physician Do not breathe dust/fume/gas/mist/vapors/spray Do not get in eyes, on skin, or on clothing |
| Eye contact | Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes Keep eye wide open while rinsing If symptoms persist, call a physician |
| Skin contact | Consult a physician if necessary. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. |
| Ingestion | Rinse mouth. Drink plenty of water. If symptoms persist, call a physician. Do NOT induce vomiting. |
| Inhalation | Move to fresh air. Call a physician. If breathing is irregular or stopped, administer artificial respiration. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. |
| Self-protection of the first aider | Use personal protective equipment |

4.2. Most important symptoms and effects, both acute and delayed**4.3. Indication of any immediate medical attention and special treatment needed**

Note to physicians Treat symptomatically

5. FIRE-FIGHTING MEASURES**5.1. Extinguishing media****Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Extinguishing media which shall not be used for safety reasons

No information available

5.2. Special hazards arising from the substance or mixture**Special Hazard**

None

5.3. Advice for firefighters**Special protective equipment for fire-fighters**

As in any fire, wear self-contained breathing apparatus and full protective gear

6. ACCIDENTAL RELEASE MEASURES**6.1. Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation.

See Section 12 for additional Ecological Information

6.2. Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust)

7. HANDLING AND STORAGE**7.1. Precautions for safe handling**

Avoid contact with skin, eyes and clothing. Use personal protective equipment as required. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

7.3 Specific end use(s)

Exposure scenario N/A

Other Guidelines N/A

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters**Exposure limits**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

| Chemical Name | European Union | The United Kingdom | France | Spain | Germany |
|--------------------------|---|--|--|---|---|
| ETHYL ALCOHOL 64-17-5 | | STEL: 3000 ppm STEL: 5760 mg/m ³ TWA: 1000 ppm TWA: 1920 mg/m ³ | TWA: 1000 ppm TWA: 1900 mg/m ³ STEL: 5000 ppm STEL: 9500 mg/m ³ | STEL: 1000 ppm STEL: 1910 mg/m ³ | TWA: 500 ppm TWA: 960 mg/m ³ Ceiling / Peak: 1000 ppm Ceiling / Peak: 1920 mg/m ³ Skin |
| LIMONENE 5989-27-5 | | | | | MAK: 20 ppm MAK: 110 mg/m ³ Ceiling / Peak: 40 ppm Ceiling / Peak: 220 mg/m ³ TWA: 20 ppm TWA: 110 mg/m ³ |
| Trade Secret | | STEL: 400 ppm TWA: 200 ppm | VME: 400 ppm VME: 1400 mg/m ³ | VLA-ED: 400 ppm VLA-ED: 1460 mg/m ³ | MAK: 400 ppm MAK: 1500 mg/m ³ Ceiling / Peak: 800 ppm Ceiling / Peak: 3000 mg/m ³ TWA: 400 ppm TWA: 1500 mg/m ³ |
| Trade Secret | | | | VLA-ED: 20 ppm VLA-ED: 113 mg/m ³ | |
| Trade Secret | TWA 50 ppm TWA: 270 mg/m ³ STEL 100 ppm STEL: 540 mg/m ³ | | VME: 50 ppm VME: 270 mg/m ³ VLCT: 100 ppm VLCT: 540 mg/m ³ | VLA-EC: 100 ppm VLA-EC: 540 mg/m ³ VLA-ED: 50 ppm VLA-ED: 270 mg/m ³ | MAK: 50 ppm MAK: 270 mg/m ³ Ceiling / Peak: 50 ppm Ceiling / Peak: 270 mg/m ³ TWA: 50 ppm TWA: 270 mg/m ³ |
| Trade Secret | | | | | TWA: 50 ppm TWA: 210 mg/m ³ |
| Trade Secret | | | | | TWA: 20 ppm TWA: 106 mg/m ³ |
| Trade Secret | | | | | Skin |
| Trade Secret | | | | VLA-ED: 10 ppm | |

| Chemical Name | Italy | Portugal | The Netherlands | Finland | Denmark |
|--------------------------|---|------------------------------|--|--|--|
| ETHYL ALCOHOL 64-17-5 | | TWA: 1000 ppm | Skin STEL: 1900 mg/m ³ TWA: 260 mg/m ³ | TWA: 1000 ppm TWA: 1900 mg/m ³ STEL: 1300 ppm STEL: 2500 mg/m ³ | TWA: 1000 ppm TWA: 1900 mg/m ³ |
| LIMONENE 5989-27-5 | | | | TWA: 25 ppm TWA: 140 mg/m ³ STEL: 50 ppm STEL: 280 mg/m ³ | |
| Trade Secret | | TWA: 400 ppm | | TWA: 300 ppm TWA: 1100 mg/m ³ STEL: 500 ppm STEL: 1800 mg/m ³ | TWA: 150 ppm TWA: 540 mg/m ³ |
| Trade Secret | | TWA: 20 ppm | | | |
| Trade Secret | TWA: 50 ppm TWA: 270 mg/m ³ STEL: 100 ppm STEL: 540 mg/m ³ | STEL: 100 ppm TWA: 50 ppm | STEL: 530 mg/m ³ | TWA: 50 ppm TWA: 270 mg/m ³ STEL: 100 ppm STEL: 540 mg/m ³ | TWA: 50 ppm TWA: 266 mg/m ³ |

| | | | | | |
|--------------|--|-------------|--|---|--|
| Trade Secret | | | | TWA: 1 ppm TWA: 4.4 mg/m ³ STEL: 4 ppm STEL: 17.4 mg/m ³ Ceiling: 4 ppm Ceiling: 17.4 mg/m ³ | |
| Trade Secret | | | | STEL: 10 ppm STEL: 42 mg/m ³ | |
| Trade Secret | | TWA: 10 ppm | | | |

| Chemical Name | Austria | Sweden - Occupational Exposure Limits - TLVs (LLVs) | Switzerland | Poland | Norway |
|--------------------------|--|---|--|--|---|
| ETHYL ALCOHOL 64-17-5 | STEL 2000 ppm STEL 3800 mg/m ³ TWA: 1000 ppm TWA: 1900 mg/m ³ | 500 ppm NGV 1000 mg/m ³ NGV | STEL: 1000 ppm STEL: 1920 mg/m ³ TWA: 500 ppm TWA: 960 mg/m ³ | TWA: 1900 mg/m ³ | TWA: 500 ppm TWA: 950 mg/m ³ STEL: 625 ppm STEL: 1187.5 mg/m ³ |
| LIMONENE 5989-27-5 | | | STEL: 40 ppm STEL: 220 mg/m ³ MAK: 20 ppm MAK: 110 mg/m ³ | | TWA: 25 ppm TWA: 140 mg/m ³ STEL: 37.5 ppm STEL: 175 mg/m ³ |
| Trade Secret | STEL 600 ppm STEL 2100 mg/m ³ MAK: 300 ppm MAK: 1050 mg/m ³ | 150 ppm NGV 500 mg/m ³ NGV | STEL: 800 ppm STEL: 2800 mg/m ³ MAK: 400 ppm MAK: 1400 mg/m ³ | NDSch: 600 mg/m ³ NDS: 200 mg/m ³ | TWA: 150 ppm TWA: 550 mg/m ³ STEL: 187.5 ppm STEL: 687.5 mg/m ³ |
| Trade Secret | | 25 ppm NGV 150 mg/m ³ NGV | | | TWA: 25 ppm TWA: 140 mg/m ³ Skin STEL: 37.5 ppm STEL: 175 mg/m ³ |
| Trade Secret | STEL 100 ppm STEL 540 mg/m ³ MAK: 50 ppm MAK: 270 mg/m ³ | 100 ppm NGV 500 mg/m ³ NGV | | NDSch: 500 mg/m ³ NDS: 250 mg/m ³ | TWA: 50 ppm TWA: 260 mg/m ³ STEL: 75 ppm STEL: 325 mg/m ³ |
| Trade Secret | | | | NDSch: 40 mg/m ³ NDS: 10 mg/m ³ | |
| Trade Secret | | | | STEL: 80 mg/m ³ TWA: 40 mg/m ³ | |
| Trade Secret | | 1 ppm NGV | | | |

| Component | Ireland |
|-----------------------------------|---|
| ETHYL ALCOHOL 64-17-5 (30-50%) | STEL: 1000 ppm |
| Trade Secret (<1) | TWA: 200 ppm STEL: 400 ppm |
| Trade Secret (<1) | TWA: 50 ppm TWA: 260 mg/m ³ STEL: 100 ppm STEL: 520 mg/m ³ |
| Trade Secret (<1) | TWA: 20 ppm |

Derived No Effect Level (DNEL) No information available

Predicted No Effect Concentration (PNEC) No information available

8.2. Exposure controls

Engineering Controls Ensure adequate ventilation, especially in confined areas

Personal protective equipment

Eye Protection Tightly fitting safety goggles

| | |
|---------------------------------|---|
| Hand Protection | Protective gloves |
| Skin and body protection | Long sleeved clothing |
| Respiratory protection | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators |

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

Environmental Exposure Controls Do not allow material to contaminate ground water system

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

| | | | |
|---|--------------------------|--------------------------|----------------------------|
| Physical state | liquid | Appearance | liquid |
| Odor | typical of guava | Color | Colorless to light yellow. |
| <u>Property</u> | <u>Values</u> | <u>Method</u> | |
| pH | | No information available | |
| Melting/freezing point | | No information available | |
| Boiling point/boiling range | | FCC Method | |
| Flash Point | 25 °C / 77 °F | Closed cup | |
| Evaporation rate | | FCC Method | |
| Flammability (solid, gas) | | No information available | |
| Flammability Limits in Air | | No information available | |
| Upper flammability limit | | | |
| lower flammability limit | | | |
| Vapor pressure mm Hg 20°C | | No information available | |
| Vapor density | | No information available | |
| Relative density | | No information available | |
| Specific Gravity @ 25C | 1.004 - 1.024 | FCC Method | |
| Specific Gravity @ 20C | 1.007 - 1.027 | FCC Method | |
| Refractive Index | 1.404 - 1.424 | FCC Method | |
| Water solubility | | No information available | |
| Partition coefficient: n-octanol/water | | No information available | |
| Autoignition temperature | | No information available | |
| Decomposition temperature | | No information available | |
| Viscosity, dynamic | | No information available | |
| Explosive properties | No information available | | |
| Oxidizing Properties | No information available | | |

9.2. Other information

| | |
|-------------------------|--------------------------|
| VOC Content(%) | 39.0194992341567 |
| Molecular Weight | No information available |

10. STABILITY AND REACTIVITY

10.1. Reactivity

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

10.4. Conditions to avoid

Heat, flames and sparks

10.5. Incompatible materials

No materials to be especially mentioned

10.6. Hazardous decomposition products

None under normal use conditions

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity

Inhalation There is no data available for this product

Eye contact There is no data available for this product

Skin contact There is no data available for this product

Ingestion There is no data available for this product

Acute toxicity 3.57926% of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document (Rev. 1, 2005):

Oral 5,288.00 mg/kg

Dermal 3,534.00 mg/kg

| Chemical Name | Oral LD50 | Dermal LD50 | LC50 Inhalation |
|--|----------------------|--|------------------------|
| ETHYL ALCOHOL | | | 124.7 mg/L (Rat) 4 h |
| TRIETHYL CITRATE | 5900 mg/kg (Rat) | 5 g/kg (Rabbit) | |
| Trade Secret | 13 g/kg (Rat) | 2 g/kg (Rabbit) | |
| LIMONENE | 4400 mg/kg (Rat) | 2000 mg/kg (Rabbit) | |
| Trade Secret | 5620 mg/kg (Rat) | 18000 mg/kg (Rabbit) 20 mL/kg (Rabbit) | |
| Trade Secret | 2100 mg/kg (Rat) | 5000 mg/kg (Rat) | |
| Trade Secret | 16600 mg/kg (Rat) | 5 g/kg (Rabbit) | |
| Trade Secret | 800 mg/kg (Rat) | 1250 mg/kg (Rabbit) | |
| Trade Secret | 1870 µL/kg (Rat) | 1460 µL/kg (Rabbit) | |
| Trade Secret | 780 mg/kg (Rat) | 600 mg/kg (Rabbit) | |
| Trade Secret | 4700 mg/kg (Rat) | 5 g/kg (Rabbit) | |
| Trade Secret | 5170 mg/kg (Rat) | | |
| Trade Secret | 720 mg/kg (Rat) | 1500 mg/kg (Rabbit) | 21 mg/L (Rat) 1 h |
| Trade Secret | = 4890 mg/kg (Rat) | | |
| Trade Secret | 5 g/kg (Rat) | 5 g/kg (Rabbit) | |
| ACETOIN 96/100% FCC (ACETYL METHYL CARBINOL) | 5 g/kg (Rat) | 5 g/kg (Rabbit) | |
| Trade Secret | > 3200 mg/kg (Rat) | > 5000 mg/kg (Rabbit) | |
| Trade Secret | = 3 g/kg (Rat) | | |
| Trade Secret | 1300 mg/kg (Rat) | 2500 mg/kg (Rabbit) | |
| Trade Secret | | | 1.38 mg/L (Rat) 4 h |
| Trade Secret | 3600 mg/kg (Rat) | 5000 mg/kg (Rabbit) | |
| Trade Secret | 535 mg/kg (Rat) | | |
| Trade Secret | 5 g/kg (Rat) | 5 g/kg (Rabbit) | |
| Trade Secret | 1177 mg/kg (Rat) | | |
| Trade Secret | 2790 mg/kg (Rat) | 5610 mg/kg (Rat) | |

Skin corrosion/irritation No information available

Eye damage/irritation No information available

Sensitization No information available

Germ Cell Mutagenicity No information available

| | |
|--|---|
| Carcinogenicity | No information available |
| Specific target organ systemic toxicity (single exposure) | No information available |
| Specific target organ systemic toxicity (repeated exposure) | No information available |
| Target Organ Effects | Blood Central nervous system Eyes Liver Reproductive system Respiratory system Skin |
| Aspiration hazard | No information available |

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants

| Chemical Name | Toxicity to algae | Toxicity to fish | Toxicity to daphnia and other aquatic invertebrates |
|---------------|--|--|---|
| ETHYL ALCOHOL | | 12.0 - 16.0: 96 h Oncorhynchus mykiss mL/L LC50 static 100: 96 h Pimephales promelas mg/L LC50 static 13400 - 15100: 96 h Pimephales promelas mg/L LC50 flow-through | 9268 - 14221: 48 h Daphnia magna mg/L LC50 2: 48 h Daphnia magna mg/L EC50 Static |
| LIMONENE | | 0.619-0.796: 96 h Pimephales promelas mg/L LC50 flow-through 35: 96 h Oncorhynchus mykiss mg/L LC50 | |
| Trade Secret | 3300: 48 h Desmodemus subspicatus mg/L EC50 | 220-250: 96 h Pimephales promelas mg/L LC50 flow-through 352-500: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 484: 96 h Oncorhynchus mykiss mg/L LC50 flow-through | 560: 48 h Daphnia magna mg/L EC50 Static |
| Trade Secret | | 0.28: 96 h Pimephales promelas mg/L LC50 static | 41: 48 h Daphnia magna mg/L LC50 |
| Trade Secret | | 0.8-1.44: 96 h Lepomis macrochirus mg/L LC50 flow-through 10.6-11.8: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 12.69: 96 h Oncorhynchus mykiss mg/L LC50 static 6.8-8.53: 96 h Pimephales promelas mg/L LC50 flow-through 7.5: 96 h Lepomis macrochirus mg/L LC50 static | 50: 24 h Daphnia magna mg/L EC50 |
| Trade Secret | | 8.02-9.97: 96 h Pimephales promelas mg/L LC50 flow-through | |
| Trade Secret | | 352-412: 96 h Pimephales promelas mg/L LC50 flow-through | |
| Trade Secret | | 144: 96 h Brachydanio rerio mg/L LC50 static 89.7-106: 96 h Pimephales promelas mg/L LC50 flow-through | 201: 24 h Daphnia magna mg/L EC50 |
| Trade Secret | | 12 - 16.5: 96 h Pimephales promelas mg/L LC50 flow-through | |
| Trade Secret | 14: 48 h Desmodemus subspicatus mg/L EC50 static | 11.4 - 12.9: 96 h Pimephales promelas mg/L LC50 flow-through 17.68: 96 h Oncorhynchus mykiss mg/L LC50 static | 15 - 26: 24 h Daphnia magna mg/L EC50 |
| Trade Secret | 490: 72 h Desmodemus subspicatus mg/L EC50 | 220 - 460: 96 h Leuciscus idus mg/L LC50 static | 287.17: 48 h Daphnia magna mg/L EC50 |

| | | | |
|--------------|---|--|----------------------------------|
| Trade Secret | | | 23: 48 h Daphnia pulex mg/L EC50 |
| Trade Secret | | 17.1 - 19: 96 h Pimephales promelas mg/L LC50 flow-through | |
| Trade Secret | | 6.7: 96 h Pimephales promelas mg/L LC50 flow-through | |
| Trade Secret | 88.3: 96 h Desmodemus subspicatus mg/L EC50 | 22-46: 96 h Leuciscus idus mg/L LC50 static | 20: 48 h Daphnia magna mg/L EC50 |

12.2. Persistence and degradability

No information available

12.3. Bioaccumulative potential

No information available

| Chemical Name | log Pow |
|---------------|------------|
| ETHYL ALCOHOL | -0.32 |
| Trade Secret | 0.6 |
| Trade Secret | 4.1 |
| Trade Secret | 1.48 |
| Trade Secret | 2.03 |
| Trade Secret | 1.78 |
| Trade Secret | 3.15 |
| Trade Secret | 1.38 |
| Trade Secret | 2.72 |
| Trade Secret | 2.84 - 3.1 |

12.4. Mobility in soil

No information available

12.5. Results of PBT and vPvB assessment**12.6. Other adverse effects**

| | | | |
|---------------|--|--|---|
| Chemical Name | EU - Endocrine Disrupters Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
| Trade Secret | Group III Chemical | | |
| Trade Secret | Group III Chemical | | |

13. DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

| | |
|--|--|
| Waste from residues / unused products | Dispose of in accordance with local regulations |
| Contaminated packaging | Empty containers should be taken to an approved waste handling site for recycling or disposal |
| Other Information | According to the European Waste Catalogue, Waste Codes are not product specific, but application specific Waste codes should be assigned by the user based on the application for which the product was used |

14. TRANSPORT INFORMATION**DOT****IMDG / IMO**

| | |
|-----------------------------|------------------------------|
| Proper shipping name | EXTRACTS, FLAVOURING, LIQUID |
| Hazard class | 3 |
| UN/ID No | 1197 |

| | |
|-------------------------|--|
| Packing Group | III |
| Marine pollutant | This product contains a chemical which is listed as a marine pollutant according to IMDG/IMO |

ICAO/IATA

| | |
|-----------------------------|------------------------------|
| UN/ID No | 1197 |
| Proper shipping name | EXTRACTS, FLAVOURING, LIQUID |
| Hazard class | 3 |
| Packing Group | III |
| ERG Code | 127 |

15. REGULATORY INFORMATION

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

WGK Classification

| Chemical Name | Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes |
|--|---|
| ETHYL ALCOHOL 64-17-5 | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 2 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| ACETOIN 96/100% FCC (ACETYL METHYL CARBINOL) 513-86-0 | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |
| Trade Secret | Hazard Class 1 |

International Inventories

All of the components in the product are on the following Inventory lists: United States of America (TSCA), Canada (DSL/NDSL), Australia (AICS), China (IECSC), Philippines (PICCS).

| | |
|----------------------|----------|
| TSCA | Complies |
| EINECS/ELINCS | - |
| DSL/NDSL | Complies |
| PICCS | Complies |
| ENCS | - |
| IECSC | Complies |
| AICS | Complies |
| KECL | - |

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

AICS - Australian Inventory of Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

15.2. Chemical safety assessment

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

H319 - Causes serious eye irritation H225 - Highly flammable liquid and vapor

Revision Date 23-Jun-2015

Revision Note Not applicable.

Revision# 1

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

WARNING/DISCLAIMER:

Apex Flavors, Inc.'s products are sold exclusively for use in food and drink for human consumption. These products have not been tested, nor have they been deemed safe, for inhalation or use in electronic smoking devices, electronic nicotine delivery systems, and electronic cigarettes or similar devices (collectively "E-Cigarettes"). In supplying this product(s), Apex Flavors, Inc. instructs, and purchasing recipient confirms, that this product(s) will not be used in connection with the manufacture and distribution of E-Cigarettes or any component thereof. Recipients of our products that use them outside of their intended use of food or drink do so at their own risk and without warranty, either expressed or implied, from Apex Flavors, Inc. or its suppliers. The user assumes all liability for loss, injury, damage, or expense resulting from such uses.

Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.