



This safety data sheet complies with the requirements of:
 Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

Revision Date 11-Sep-2017

Version 2

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code(s) 346PGFT
Product name CLEMENTINE ORANGE EXTRACT, NATURAL WONF

Pure substance/mixture Mixture
 Contains LIMONENE, ETHYL ALCOHOL

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

Recommended Use Ingredient for further processing

Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

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

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

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

| | |
|--|----------------------|
| Serious eye damage/eye irritation | Category 2 - (H319) |
| Skin sensitization | Category 1 - (H317) |
| Carcinogenicity | Category 1A - (H350) |
| Chronic aquatic toxicity | Category 3 - (H412) |
| Flammable liquids | Category 2 - (H225) |

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

2.2. Label elements

Product identifier
 Contains LIMONENE, ETHYL ALCOHOL



Signal Word
Danger

Hazard Statements

H317 - May cause an allergic skin reaction
 H319 - Causes serious eye irritation
 H350 - May cause cancer
 H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements - EU (§28, 1272/2008)

P280 - Wear eye protection/ face protection
 P321 - Specific treatment (see .? on this label)
 P201 - Obtain special instructions before use
 P280 - Wear protective gloves/protective clothing/eye protection/face protection
 P308 + P313 - IF exposed or concerned: Get medical advice/attention
 P273 - Avoid release to the environment
 P370 + P378 - In case of fire: Use .? to extinguish
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

2.3. Other information

No information available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

| Chemical Name | EC-No | CAS-No | 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 | 200-578-6 | 64-17-5 | 50-90% | F; R11 | Flam. Liq. 2 (H225) Eye Irrit. 1 (H319) | No data available |
| LIMONENE | 227-813-5 | 5989-27-5 | 1-5% | R10, Xi; R38, Xi; R43, N; R50/53; | Aquatic Acute 1 (H400) Skin Sens. 1 (H317) Skin Irrit. 1 (H315) Asp. Tox. 1 (H304) Aquatic Chronic 1 (H410) Flam. Liq. 3 (H226) | No data available |
| ACETALDEHYDE | 200-836-8 | 75-07-0 | <1% | F+; R12 Xi; R36/37 Carc.Cat.3; R40 | Carc. 2 (H351) (EFFA) Eye Irrit. 1 (H319) (EFFA) Flam. Liq. 1 (H224) (EFFA) Flam. Liq. 1 (H224) STOT SE 3 (H335) Carc. 2 (H351) Eye Irrit. 2 (H319) | No data available |
| PINENES | 201-291-9 | 80-56-8 | <1% | R10, Xi; R43, N; R50/53, XN; R65; | Aquatic Acute 1 (H400) Skin Sens. 1 (H317) Skin Irrit. 1 (H315) Asp. Tox. 1 (H304) Aquatic Chronic 1 (H410) Acute Tox. 5 (H303) Flam. Liq. 3 (H226) | No data available |

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

Full text of H- and EUH-phrases: see section 16

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

| | |
|---------------------|--|
| Inhalation | Move to fresh air. |
| Skin contact | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. |
| Eye contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Ingestion | Clean mouth with water and drink afterwards plenty of water. |

4.2. Most important symptoms and effects, both acute and delayed

Main Symptoms No information available.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

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

Unsuitable extinguishing media

No information available

5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions

Ensure adequate ventilation.

For emergency responders

Use personal protection recommended in Section 8.

6.2. Environmental precautions

Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

6.4. Reference to other sections

See section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling

Ensure adequate ventilation.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions

Keep container tightly closed in a dry and well-ventilated place.

Incompatible products

None known based on information supplied.

7.3 Specific end use(s)

Risk Management Methods (RMM)

The information required is contained in this Material Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

| 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 | VME: 1000 ppm VME: 1900 mg/m ³ VLCT: 5000 ppm VLCT: 9500 mg/m ³ | VLA-ED: 1000 ppm VLA-ED: 1910 mg/m ³ | - |
| ACETALDEHYDE 75-07-0 | - | STEL: 50 ppm STEL: 92 mg/m ³ TWA: 20 ppm TWA: 37 mg/m ³ | TWA: 100 ppm TWA: 180 mg/m ³ | STEL: 25 ppm STEL: 46 mg/m ³ | - |
| PINENES 80-56-8 | - | - | - | VLA-ED: 20 ppm VLA-ED: 113 mg/m ³ | - |
| 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 | - |
| ACETALDEHYDE 75-07-0 | - | Ceiling: 25 ppm | STEL: 92 mg/m ³ TWA: 37 mg/m ³ | STEL: 25 ppm STEL: 46 mg/m ³ | Ceiling: 25 ppm Ceiling: 45 mg/m ³ |
| PINENES 80-56-8 | - | TWA: 20 ppm | - | - | - |
| Chemical Name | Austria | Switzerland | Poland | Norway | Ireland |
| ETHYL ALCOHOL 64-17-5 | STEL 2000 ppm STEL 3800 mg/m ³ MAK: 1000 ppm MAK: 1900 mg/m ³ | STEL: 1000 ppm STEL: 1920 mg/m ³ MAK: 500 ppm MAK: 960 mg/m ³ | NDS: 1900 mg/m ³ | TWA: 500 ppm TWA: 950 mg/m ³ STEL: 625 ppm STEL: 1187.5 mg/m ³ | TWA: 1000 ppm TWA: 1900 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 | - |
| ACETALDEHYDE 75-07-0 | STEL 50 ppm STEL 90 mg/m ³ TWA: 50 ppm TWA: 90 mg/m ³ Ceiling 50 ppm Ceiling 90 mg/m ³ | STEL: 50 ppm STEL: 90 mg/m ³ TWA: 90 mg/m ³ TWA: 50 ppm | : 45 mg/m ³ TWA: 5 mg/m ³ | TWA: 25 ppm TWA: 45 mg/m ³ STEL: 37.5 ppm STEL: 67.5 mg/m ³ | TWA: 25 ppm TWA: 45 mg/m ³ STEL: 25 ppm STEL: 45 mg/m ³ |
| PINENES 80-56-8 | - | - | - | TWA: 25 ppm TWA: 140 mg/m ³ Skin STEL: 37.5 ppm STEL: 175 mg/m ³ | - |

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/face protection Tightly fitting safety goggles.

Skin and body protection Long sleeved clothing.

Environmental Exposure Controls No information available.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state liquid
Appearance clear
Odor orange and tangerine
Color yellow to amber

| <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 | 22 °C / 72 °F | Closed cup |
| Evaporation rate | | FCC Method |
| Flammability (solid, gas) | | No information available |
| Flammability Limits in Air | | |
| Upper flammability limit | | No information available |
| lower flammability limit | | No information available |
| Vapor pressure mm Hg 20°C | | No information available |
| Vapor density | | No information available |
| Relative density | | No information available |
| Specific Gravity @ 25C | 0.8951 - 0.9251 | FCC Method |
| Specific Gravity @ 20C | 0.8981 - 0.9281 | FCC Method |
| Refractive Index | 1.3494 - 1.3794 | FCC Method |
| Water solubility | | No information available |
| Solubility in other solvents | | No information available |
| Partition coefficient: n-octanol/water | | No information available |
| Autoignition temperature | | No information available |
| Decomposition temperature | | No information available |
| Viscosity, kinematic | | No information available |

| | | |
|-----------------------------|--------------------------|--------------------------|
| Viscosity, dynamic | No information available | No information available |
| Explosive properties | No information available | |
| Oxidizing Properties | No information available | |

9.2. Other information

| | |
|---------------------------|--------------------------|
| Softening point | No information available |
| Molecular Weight | No information available |
| VOC Content(%) | No information available |
| Density VALUE | No information available |
| Bulk Density VALUE | No information available |

Section 10: STABILITY AND REACTIVITY**10.1. Reactivity**

No data available.

10.2. Chemical stability

Stable under normal conditions.

Explosion data

| | |
|----------------------------------|-------|
| Sensitivity to Mechanical Impact | none. |
| Sensitivity to Static Discharge | Yes. |

10.3. Possibility of hazardous reactions**Hazardous Reactions**

None under normal processing.

10.4. Conditions to avoid

None known.

10.5. Incompatible materials

No information available.

10.6. Hazardous decomposition products

None under normal use conditions.

Section 11: TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects****Acute toxicity****Product Information**

Product does not present an acute toxicity hazard based on known or supplied information.

| | |
|---------------------|--|
| 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. |

The following values are calculated based on chapter 3.1 of the GHS document

| | |
|--------------------------------------|----------------|
| ATEmix (oral) | 7,089.00 mg/kg |
| ATEmix (dermal) | 3,528.00 mg/kg |
| ATEmix (inhalation-dust/mist) | 67,568.04 mg/l |
| Unknown Acute Toxicity | |

98.76872163% of the mixture consists of ingredient(s) of unknown toxicity.
 37.82186163 % of the mixture consists of ingredient(s) of unknown acute oral toxicity.
 97.15686163 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity.
 98.76872163 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas).
 98.76872163 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor).
 39.43372163 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist).

| Chemical Name | Oral LD50 | Dermal LD50 | LC50 Inhalation |
|---------------|--------------------|-----------------------|------------------------|
| ETHYL ALCOHOL | 7060 mg/kg (Rat) | | 124.7 mg/L (Rat) 4 h |
| LIMONENE | 4400 mg/kg (Rat) | 2000 mg/kg (Rabbit) | |
| ACETALDEHYDE | 1930 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. |
| Reproductive toxicity | 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. |

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity Toxic to aquatic life Harmful to aquatic life with long lasting effects

37.81647% of the mixture consists of components(s) of unknown hazards to the aquatic environment

| 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 10800: 24 h Daphnia magna mg/L EC50 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 | - |
| ACETALDEHYDE | 237 - 249: 120 h Nitzschia linearis mg/L EC50 | 28.0 - 34.0: 96 h Pimephales promelas mg/L LC50 flow-through 53: 96 h Lepomis macrochirus mg/L LC50 static 1.8 - 2.4: 96 h Oncorhynchus mykiss mg/L LC50 | 3.64 - 6.15: 48 h Daphnia magna mg/L EC50 Static 48.3: 48 h Daphnia magna mg/L EC50 |

| | | | |
|---------|---|---|----------------------------------|
| | | static 39.8 - 46.8: 96 h Pimephales promelas mg/L LC50 static | |
| PINENES | - | 0.28: 96 h Pimephales promelas mg/L LC50 static | 41: 48 h Daphnia magna mg/L LC50 |

12.2. Persistence and degradability

No information available.

12.3. Bioaccumulative potential

No information available.

| Chemical Name | log Pow |
|---------------|---------|
| ETHYL ALCOHOL | -0.32 |
| ACETALDEHYDE | 0.5 |
| PINENES | 4.1 |

12.4. Mobility in soil**Mobility in soil**

No information available.

12.5. Results of PBT and vPvB assessment

No information available.

12.6. Other adverse effects

No information available

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from residues / unused products Dispose of in accordance with local regulations.

Contaminated packaging Empty remaining contents.

Section 14: TRANSPORT INFORMATION

IMDG / IMO

14.1 UN/ID No 1197
 14.2 Proper shipping name EXTRACTS, FLAVOURING, LIQUID
 14.3 Hazard class 3
 14.4 Packing Group II

DOT/ADR/RID

14.1 UN/ID No 1197
 14.2 Proper shipping name EXTRACTS, FLAVOURING, LIQUID
 14.3 Hazard class 3
 14.4 Packing Group II

ICAO/IATA

14.1 UN/ID No 1197

| | |
|---------------------------|------------------------------|
| 14.2 Proper shipping name | EXTRACTS, FLAVOURING, LIQUID |
| 14.3 Hazard class | 3 |
| 14.4 Packing Group | II |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | None |

Section 15: REGULATORY INFORMATION

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

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Authorizations and/or restrictions on use:

This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV) This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII)

Persistent Organic Pollutants

Not applicable

Ozone-depleting substances (ODS) regulation (EC) 1005/2009 Not applicable

International Inventories

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

Legend:

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

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

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

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

No information available

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of R-phrases referred to under sections 2 and 3

No information available

Full text of H-Statements referred to under section 3

H400 - Very toxic to aquatic life
H317 - May cause an allergic skin reaction
H315 - Causes skin irritation
H304 - May be fatal if swallowed and enters airways
H410 - Very toxic to aquatic life with long lasting effects
H226 - Flammable liquid and vapor
H225 - Highly flammable liquid and vapor
H319 - Causes serious eye irritation
H351 - Suspected of causing cancer if inhaled
H224 - Extremely flammable liquid and vapor
H335 - May cause respiratory irritation
H303 - May be harmful if swallowed

Legend

SVHC: Substances of Very High Concern for Authorization:

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

| | | | |
|----------|-----------------------|-------|---------------------------|
| TWA: | Time weighted average | STEL: | Short term exposure limit |
| Ceiling: | Maximum limit value: | * | Skin designation |

Revision Date 11-Sep-2017

Reason for revision: Not applicable.

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