



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

Revision Date 29-Jan-2026

Version 2.01

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

### 1.1. Product identifier

**Product Code(s)** 859TTB  
**Product name** Satsuma Mandarin Type 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.  
1361 Brass Mill Rd.  
Suite E  
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/ Outside US Chemtel 813-248-0585

## Section 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

REGULATION (EC) No 1272/2008

<b>Serious eye damage/eye irritation</b>	Category 2 - (H319)
<b>Skin sensitization</b>	Category 1 - (H317)
<b>Carcinogenicity</b>	Category 1A - (H350)
<b>Chronic aquatic toxicity</b>	Category 3 - (H412)
<b>Flammable liquids</b>	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) (EFA) Eye Irrit. 1 (H319) (EFA) Flam. Liq. 1 (H224) (EFA) 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.
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### 4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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## 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.
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**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 <sup>3</sup> TWA: 1000 ppm TWA: 1920 mg/m <sup>3</sup>	VME: 1000 ppm VME: 1900 mg/m <sup>3</sup> VLCT: 5000 ppm VLCT: 9500 mg/m <sup>3</sup>	VLA-ED: 1000 ppm VLA-ED: 1910 mg/m <sup>3</sup>	-
ACETALDEHYDE 75-07-0	-	STEL: 50 ppm STEL: 92 mg/m <sup>3</sup> TWA: 20 ppm TWA: 37 mg/m <sup>3</sup>	TWA: 100 ppm TWA: 180 mg/m <sup>3</sup>	STEL: 25 ppm STEL: 46 mg/m <sup>3</sup>	-
PINENES 80-56-8	-	-	-	VLA-ED: 20 ppm VLA-ED: 113 mg/m <sup>3</sup>	-
Chemical Name	Italy	Portugal	The Netherlands	Finland	Denmark
ETHYL ALCOHOL 64-17-5	-	TWA: 1000 ppm	Skin STEL: 1900 mg/m <sup>3</sup> TWA: 260 mg/m <sup>3</sup>	TWA: 1000 ppm TWA: 1900 mg/m <sup>3</sup> STEL: 1300 ppm STEL: 2500 mg/m <sup>3</sup>	TWA: 1000 ppm TWA: 1900 mg/m <sup>3</sup>
LIMONENE 5989-27-5	-	-	-	TWA: 25 ppm TWA: 140 mg/m <sup>3</sup> STEL: 50 ppm STEL: 280 mg/m <sup>3</sup>	-
ACETALDEHYDE 75-07-0	-	Ceiling: 25 ppm	STEL: 92 mg/m <sup>3</sup> TWA: 37 mg/m <sup>3</sup>	STEL: 25 ppm STEL: 46 mg/m <sup>3</sup>	Ceiling: 25 ppm Ceiling: 45 mg/m <sup>3</sup>
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 <sup>3</sup> MAK: 1000 ppm MAK: 1900 mg/m <sup>3</sup>	STEL: 1000 ppm STEL: 1920 mg/m <sup>3</sup> MAK: 500 ppm MAK: 960 mg/m <sup>3</sup>	NDS: 1900 mg/m <sup>3</sup>	TWA: 500 ppm TWA: 950 mg/m <sup>3</sup> STEL: 625 ppm STEL: 1187.5 mg/m <sup>3</sup>	TWA: 1000 ppm TWA: 1900 mg/m <sup>3</sup>

LIMONENE 5989-27-5	-	STEL: 40 ppm STEL: 220 mg/m <sup>3</sup> MAK: 20 ppm MAK: 110 mg/m <sup>3</sup>	-	TWA: 25 ppm TWA: 140 mg/m <sup>3</sup> STEL: 37.5 ppm STEL: 175 mg/m <sup>3</sup>	-
ACETALDEHYDE 75-07-0	STEL 50 ppm STEL 90 mg/m <sup>3</sup> TWA: 50 ppm TWA: 90 mg/m <sup>3</sup> Ceiling 50 ppm Ceiling 90 mg/m <sup>3</sup>	STEL: 50 ppm STEL: 90 mg/m <sup>3</sup> TWA: 90 mg/m <sup>3</sup> TWA: 50 ppm	: 45 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	TWA: 25 ppm TWA: 45 mg/m <sup>3</sup> STEL: 37.5 ppm STEL: 67.5 mg/m <sup>3</sup>	TWA: 25 ppm TWA: 45 mg/m <sup>3</sup> STEL: 25 ppm STEL: 45 mg/m <sup>3</sup>
PINENES 80-56-8	-	-	-	TWA: 25 ppm TWA: 140 mg/m <sup>3</sup> Skin STEL: 37.5 ppm STEL: 175 mg/m <sup>3</sup>	-

**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 )		

<b>Skin corrosion/irritation</b>	No information available.
<b>Eye damage/irritation</b>	No information available.
<b>Sensitization</b>	No information available.
<b>Germ Cell Mutagenicity</b>	No information available.
<b>Carcinogenicity</b>	No information available.
<b>Reproductive toxicity</b>	No information available.
<b>Specific target organ systemic toxicity (single exposure)</b>	No information available.
<b>Specific target organ systemic toxicity (repeated exposure)</b>	No information available.
<b>Target Organ Effects</b>	Blood, Central nervous system, Eyes, Liver, Reproductive system, Respiratory system, Skin.
<b>Aspiration hazard</b>	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** 29-Jan-2026

**Reason for revision:** Not applicable.

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

**WARNING/DISCLAIMER**

Our ingredients have not been tested, nor have they been determined safe, for inhalation or use in any electronic smoking devices, electronic nicotine delivery systems, electronic cigarettes, or other similar devices (collectively "E-Cigarettes") or in any E-Liquids used with E-Cigarettes. By receiving Apex Flavors, Inc ingredients, the recipient confirms that they will not use these ingredients in connection with the manufacture and distribution of E-Cigarettes, E-Liquids or any component thereof. WE DISCLAIM, TO THE FULLEST EXTENT PERMITTED BY LAW, ALL WARRANTIES, EXPRESS OR IMPLIED, and disclaim all liability in connection with the use of our ingredients in connection with E-Cigarettes and E-Liquids. All such risks are assumed by you and the user.

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