

Safety Data Sheet

Beta Caryophyllene



Revision Date: 11/02/2018

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1. Identification

Product Description	Beta Caryophyllene
CAS #	87-44-5
FEMA Number	2252
True Terpenes Item #	RM10002
Recommended Use	Concentrated aromatic and flavor ingredient which may be used in flavor and fragrance compounds according to legal and IFRA or FEMA GRAS/FDA guidelines.
Recommended Restrictions	For manufacturing use only
Company	True Terpenes (888) 954-8550 TrueTerpenes.com
Emergency Contact	Poison Control Helpline: 1 (800) 222-1222

2. Hazard(s) Identification



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Physical Hazards

Not Classified

Health Hazards

Skin corrosion/irritation

Category 3

Sensitization, skin

Category 1

Aspiration hazard

Category 1

Environmental Hazards

Not Classified

Label Elements



Signal Word

Danger

Hazard Statement

May be fatal if swallowed and enters airways. Causes mild skin irritation. May cause an allergic skin reaction.

Precautionary Statement

Prevention

Avoid breathing mist or vapor. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves.

Response

IF SWALLOWED: Immediately call a POISON CENTER/doctor. Do NOT induce vomiting. IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Storage

Store locked up.

Disposal

Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not Otherwise

None known.



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Classified (HNOC)

Supplemental Information

100% of the mixture consists of component(s) of unknown acute oral toxicity. 100% of the mixture consists of component(s) of unknown acute dermal toxicity. 100% of the mixture consists of component(s) of unknown acute inhalation toxicity. 100% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 100% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition / Information on Ingredients

Chemical Name	Common Name and Synonyms	CAS Number	Percent
CARYOPHYLLENE BETA	(1R,4E,9S)-4,11,11-trimethyl-8-methylidenebicyclo[7.2.0]undec-4-ene	87-44-5	100

4. First-Aid Measures

Inhalation

If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.



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Skin Contact	Take off immediately all contaminated clothing. Get medical attention if irritation develops and persists. Wash skin thoroughly with soap and water for several minutes.
Eye Contact	Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists. Promptly wash eyes with plenty of water while lifting the eye lids.
Ingestion	Call a physician or poison control center immediately. If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.
Most Important Symptoms / Effects, Acute and Delayed	Aspiration may cause pulmonary edema and pneumonitis. Mild skin irritation. May cause an allergic skin reaction. Dermatitis. Rash.
Indication of Immediate Medical Attentional and Special Treatment Needed	Not available.
General Advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-Fighting Measures

Suitable Extinguishing Media	Water spray, fog, CO2, dry chemical, or alcohol resistant foam.
Unsuitable Extinguishing Media	Do not use a solid water stream as it may scatter and spread fire.



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Specific Hazards Arising from the Chemical

Fire may produce irritating, corrosive and/or toxic gases.

Special Protective Equipment and Precautions for Firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Firefighting Equipment / Instructions

In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage. Ventilate closed spaces before entering them. Keep run-off water out of sewers and water sources. Dike for water control.

Specific Methods

Use water spray to cool unopened containers.

General Fire Hazards

Static charges generated by emptying package in or near flammable vapor may cause flash fire.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Keep unnecessary personnel away. Avoid contact with skin or inhalation of spillage, dust or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Eliminate all sources of ignition.

Methods and Materials for Containment and Cleaning Up

Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the



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spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.

The product is immiscible with water and will spread on the water surface.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Prevent product from entering drains. Absorb in vermiculite, dry sand or earth and place into containers.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. This material and its container must be disposed of as hazardous waste. Collect and dispose of spillage as indicated in section 13 of the SDS.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid release to the environment. Retain and dispose of contaminated wash water. Contact local authorities in case of spillage to drain/aquatic environment.

7. Handling and Storage

Precautions for Safe Handling

Do not handle or store near an open flame, heat or other sources of ignition. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid



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prolonged exposure. Wash thoroughly after handling.

Conditions for Safe Storage, Including any Incompatibilities

Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area.

8. Exposure Controls / Personal Protection

Occupational Exposure Limits

This substance has no PEL, TLV, or other recommended exposure limit.

Biological Limit Values

No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls

Use explosion-proof ventilation equipment to stay below exposure limits. Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual Protection Measures, Such as Personal Protective Equipment

Eye / Face Protection

Wear safety glasses with side shields (or goggles). Face shield is recommended.

Skin Protection

Hand Protection

Chemical resistant gloves.

Other

Use of an impervious apron is recommended.

Respiratory Protection

Respiratory protection not required. If ventilation is insufficient, suitable respiratory protection must be provided.

Thermal Hazards

Wear appropriate thermal protective clothing, when necessary.



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General Hygiene Considerations

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and Chemical Properties

Appearance	Refer to Spec Sheet
Physical State	Liquid
Form	Liquid
Color	Refer to Spec Sheet
Odor	Characteristic
Odor Threshold	Not available
pH	Not available
Melting Point / Freezing Point	Not available
Initial Boiling Point and Boiling Range	Not available
Flash Point	> 200.0 °F (> 93.3 °C) Closed Cup
Evaporation Rate	Not available



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Flammability (solid, gas) Not applicable

Upper / Lower Flammability or Explosive Limits

Flammability Limit - Lower (%) Not available

Flammability Limit - Upper (%) Not available

Explosive Limit - Lower (%) Not available

Explosive Limit - Upper (%) Not available

Vapor Pressure 0.01 mm Hg at 25 °C

Vapor Density 7.1

Relative Density Not available

Solubility(ies)

Solubility (water) Insoluble

Partition Coefficient (n-octanol/water) Not available

Auto-ignition Temperature 492.8 - 498.2 °F (256 - 259 °C)

Decomposition Temperature Not available

Viscosity Not available

Other Information

Explosive Properties Not explosive

Molecular Formula C₁₅H₂₄



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Molecular Weight	204.36 g/mol
Oxidizing Properties	Not oxidizing
Specific Gravity	0.9 at 25 °C

10. Stability and Reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical Stability	Material is stable under normal conditions.
Possibility of Hazardous Reaction	No dangerous reaction known under conditions of normal use.
Conditions to Avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible Materials	Strong oxidizing agents.
Hazardous Decomposition Products	No hazardous decomposition products if stored and handled as indicated.

11. Toxicological Information



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Information on Likely Routes of Exposure

Inhalation	No adverse effects due to inhalation are expected.
Skin Contact	Causes mild skin irritation. May cause an allergic skin reaction.
Eye Contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms Related to the Physical, Chemical and Toxicological Characteristics

Aspiration may cause pulmonary edema and pneumonitis. Mild skin irritation. May cause an allergic skin reaction. Dermatitis. Rash.

Information on Toxicological Effects

Acute Toxicity	May be fatal if swallowed and enters airways.
Skin Corrosion / Irritation	Causes mild skin irritation.
Serious Eye Damage / Eye Irritation	Direct contact with eyes may cause temporary irritation.

Respiratory or Skin Sensitization

Respiratory Sensitization	Not a respiratory sensitizer.
Skin Sensitization	May cause an allergic skin reaction.

Germ Cell Mutagenicity

No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

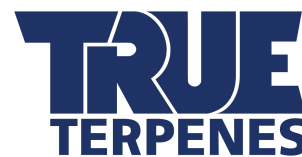
Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity



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Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not available.

Reproductive Toxicity	This product is not expected to cause reproductive or developmental effects.
Specific Target Organ Toxicity - Single Exposure	Not classified.
Specific Target Organ Toxicity - Repeated Exposure	Not classified.
Aspiration Hazard	May be fatal if swallowed and enters airways.

12. Ecological Information

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and Degradability	No data is available on the degradability of this substance.



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Bioaccumulative Potential	No data available.
Mobility in Soil	No data available.
Other Adverse Effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal Considerations

Disposal Instructions	Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Local Disposal Regulations	Dispose in accordance with all applicable regulations.
Hazardous Waste Code	Not established.
Waste from Residues / Unused Products	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated Packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.



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14. Transport Information

ADN

Not regulated as dangerous goods

ADR

Not regulated as dangerous goods

RID

Not regulated as dangerous goods

DOT BULK

Not regulated as dangerous goods

DOT NON-BULK

Not regulated as dangerous goods

IATA

Not regulated as dangerous goods

IMDG

Not regulated as dangerous goods



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15. Regulatory Information

US Federal Regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency Release Notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not available.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely Hazardous Substance

Not listed.

SARA 311/312 Hazardous Chemical



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Yes

Classified Hazard Categories

Respiratory or skin sensitization
Aspiration hazard

SARA 313 (TRI reporting)

Not regulated.

Other Federal Regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

US State Regulations

California Proposition 65

California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed Substance

Not listed.

International Inventories

Country(s) or Region	Inventory Name	On Inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes



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Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Toxic Chemical Substances (TCS)	Yes
United States and Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

*A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).



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16. Other Information

Issue Date 11/01/2018
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Version # 00

HMIS® Ratings

Health 1*
Flammability 1
Physical Hazard 0

Disclaimer

True Terpenes cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, and disposal and should not be considered as a guarantee or quality specification. This product has not been evaluated for safe use in e-cigarettes or any vaping application where the product(s) is/are intentionally vaporized and inhaled. True Terpenes has performed no testing on these products in e-cig/vaping applications. It is the sole responsibility of the individual(s) purchasing this product to assess its' safety in the final



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application. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal, and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufacturers, and technical groups and is considered to be accurate to the best of True Terpenes knowledge as of the date of this document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the specific conditions and factors relating to such use in accordance with all applicable laws and regulations.

