Vitamin A Palmitate 1.7 MIU/g (without stabilizers) 0424005

Version 6.1 Revision Date 01/07/2021 Date of last issue: 12/16/2019

SECTION 1. IDENTIFICATION

Product name	:	Vitamin A Palmitate 1.7 MIU/g (without stabilizers)
Substance name	:	all-trans-3,7-dimethyl-9-(2,6,6-trimethyl-1-cyclohexene-1-yl)-2,4,6,8-nonatetraene-1-yl palmitate

Manufacturer or supplier's details

Company name of supplier	:	DSM Nutritional Products
Address	:	45 Waterview Blvd Parsippany NJ 07054-1298
Telephone	:	(908) 475-7373
Telefax	:	(908) 475-7406
Emergency telephone number	:	1-800-424-9300 (24 HR CHEMTREC, CA & US); Outside CA & US +1-703-572-3887 (COLLECT CALLS ACCEPTED)
E-mail address of person responsible for the SDS	:	sds.nutritionalproducts@dsm.com

Recommended use of the chemical and restrictions on use

Recommended use	:	For the fortification of foods Ingredient for pharmaceutical products Ingredient for personal care products

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Reproductive toxicity	:	Category 1B

GHS label elements

Hazard pictograms :

Signal word	:	Danger
Hazard statements	:	H360 May damage fertility or the unborn child.
Precautionary statements	:	**Prevention:** P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. **Response:** P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

In case of extensive air contact (e.g. soaked rags, moistened clothes) an exothermic autooxidation (self-ignition) is possible.
Women of childbearing age must avoid any overexposure.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms	:	Retinol, hexadecanoate
Molecular formula	:	C36 H60 O2
Brief description of the product	:	Substance
Substance name	:	all-trans-3,7-dimethyl-9-(2,6,6-trimethyl-1-cyclohexene-1-yl)-2,4,6,8-nonatetraene-1-yl palmitate
CAS-No.	:	79-81-2

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
retinyl palmitate	79-81-2	>= 90 - <= 100

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. After any accidental exposure women should seek medical advice from a physician.
If inhaled	:	Move to fresh air. Consult a physician after significant exposure.
In case of skin contact	:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. If symptoms persist, call a physician.
In case of eye contact	:	Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Rinse mouth with water. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

Obtain medical attention.

Most important symptoms and effects, both acute and delayed	:	Headache Irritability Tiredness Drowsiness Nausea Vomiting Signs of increased intracranial pressure Generalized desquamation of the skin (after ca. 24 hours)
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Alcohol-resistant foam Dry chemical Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during firefighting	:	None known.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Evacuate personnel to safe areas. Use personal protective equipment. Ensure adequate ventilation. When the spilled material is cleaned up with an absorbant material, attention should be paid to the possibility of exothermic autooxidation (self-ignition) in the presence of air, even at room temperature: store in the absence of air (e.g. in water) and send for incineration (or dispose of in accordance with local regulations).
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge.
Product will burn under fire conditions.

Advice on safe handling : Handle substance within a predominantly closed system provided with extract ventilation.

Avoid exposure - obtain special instructions before use.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.
Smoking, eating and drinking should be prohibited in the application area.

Conditions for safe storage : To maintain product quality, do not store in heat or direct sunlight.
Keep under inert gas.

Keep container tightly closed and dry.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
retinyl palmitate	79-81-2	TWA	0.09 mg/m3	DSM Internal Limit

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

Hand protection
Remarks : Consider the hazard characteristics of this product and any special workplace conditions when selecting the appropriate type of protective gloves.
Glove material: for example nitrile rubber

Eye protection : Safety glasses with side-shields

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.
When using do not smoke.
Avoid contact with skin, eyes and clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance : oily liquid, May crystallize, even at room temperature.

Colour	:	yellow - brownish
Odour	:	characteristic
Odour Threshold	:	No information available.
pH	:	No data available
Melting point/range	:	ca. 26 °C
Flash point	:	381 °F (194 °C) (closed cup)
Evaporation rate	:	not determined
Flammability (solid, gas)	:	The substance or mixture does not emit flammable gases in contact with water.
Lower explosion limit	:	not determined
Upper explosion limit	:	not determined
Vapour pressure	:	< 0.001 hPa (25 °C; calculated (citation from literature))
Relative vapour density	:	not determined
Density	:	0.92 g/cm3 (20 °C)
Water solubility	:	< 0.0001 mg/l (25 °C; calculated (citation from literature)) insoluble
Solubility in other solvents	:	Ethanol: slightly soluble Ether: soluble Peanut oil: soluble
Partition coefficient: n-octanol/water	:	log Pow 15.5 (25 °C; calculated (citation from literature))
Ignition temperature	:	502 °F (261 °C) (at 1,006 - 1,014 hPa, EN 14522)
Thermal decomposition	:	No data available
Viscosity, dynamic	:	not determined
Explosive properties	:	Not explosive
Oxidizing properties	:	Not oxidizing

Other information

Molecular weight	:	524.87 g/mol

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No hazards to be specially mentioned.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	In case of extensive air contact (e.g. soaked rags, moistened clothes) an exothermic autooxidation (self-ignition) is possible.
Conditions to avoid	:	Exposure to air. Heat Exposure to light. Exposure to moisture
Incompatible materials	:	Oxidizing agents Strong acids and strong bases

Copper
Copper alloys
Iron
Iron salts

Hazardous decomposition products	:	Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	LD50 (Rat): > 2,500 mg/kg
	:	LD50 (Mouse): 6,060 mg/kg
Skin irritation	:	Mild skin irritation (Rabbit, OECD Test Guideline 404)
	:	no phototoxic skin reaction (Guinea pig)
Eye irritation	:	No eye irritation (Rabbit, OECD Test Guideline 405)
Sensitisation	:	Did not cause sensitisation on laboratory animals. (Guinea pig, Maximisation Test, OECD Test Guideline 406)
	:	no photoallergenic skin reaction (Guinea pig)
Genotoxicity in vitro	:	not mutagenic (Ames test)
Genotoxicity in vivo	:	not genotoxic (In vivo micronucleus test, Mouse)
Carcinogenicity	:	No indication for carcinogenicity known.
IARC		No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA		No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP		No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
Teratogenicity	:	embryotoxic Teratogenic (several species)
STOT - single exposure (Acute exposure)	:	The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure	:	NOAEL (Oral, Rat) : 1.43 - 3.32 mg/kg bw/d Test substance: retinyl acetate Sub-chronic toxicity study (90-day)
Experience with human exposure	:	RDA (Recommended Daily Allowance) 0.8 mg pure vitamin A (retinol) per day established for men
	:	RDA (Recommended Daily Allowance) ca. 0.7 mg pure vitamin A (retinol) per day established for women
Experience with human exposure: Ingestion	:	Acute overdose produces the following symptoms:
	:	Headache, Irritability, Tiredness, Drowsiness, Nausea, Vomiting, Signs of increased intracranial pressure, Generalized desquamation of the skin (after ca. 24 hours)
Further information	:	Danger of cumulative effects.
Aspiration toxicity	:	No aspiration toxicity classification

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	:	Leuciscus idus (Golden orfe) LC50 (96 h) > 10,000 mg/l Test substance: retinyl propionate (nominal concentration) (DIN 38412)
Toxicity to algae	:	Desmodesmus subspicatus (green algae) ErC50 (72 h) 153 mg/l (nominal concentration) (DIN 38412)
	:	ErC10 (72 h) 4.4 mg/l (nominal concentration)
Toxicity to bacteria	:	activated sludge EC20 (0.5 h) > 1,000 mg/l (nominal concentration) (OECD Test Guideline 209)

Persistence and degradability

Biodegradability	:	Not readily biodegradable. 40 - 50 % (28 d) (OECD Test Guideline 301F)
Photodegradation	:	Decomposes rapidly in contact with light. Half-life (direct photolysis): 55 min (calculated value)

Bioaccumulative potential

Bioaccumulation	:	Bioconcentration factor (BCF): 3.16 Method: calculated value Accumulation in aquatic organisms is unlikely.
Partition coefficient: n-octanol/water	:	log Pow 15.5 (25 °C ; calculated (citation from literature))

Mobility in soil

Distribution among environmental compartments	:	Adsorption, Soil log Koc 9.0 (calculated value)
Stability in soil	:	Adsorbs on soil.

Results of PBT and vPvB assessment

Assessment	:	The substance does not fulfill the PBT criteria.
	:	The substance does not fulfill the vPvB criteria.

Other adverse effects

Regulation	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information	:	May cause long-term adverse effects in the aquatic environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	User must determine if any wastes generated exhibit hazardous characteristics as per 40 CFR Part 261 or other national / local legislation. Organic materials (e.g. rags, paper, wood) which are soaked with this product can heat up and catch fire in the presence of air, even at room temperature: store in the absence of air (e.g. in water) and send it for incineration (or dispose of in accordance with local regulations). Discharge into the environment must be avoided. Do not contaminate ponds, waterways or ditches with chemical or used container. Do not dispose of waste into sewer. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging	:	Dispose of as unused product. Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

49 CFR
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Reproductive toxicity

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act
This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307
This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

retinyl palmitate 79-81-2

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

TSCA list

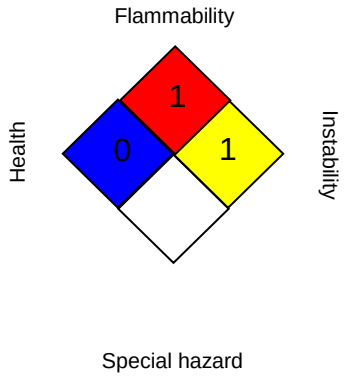
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

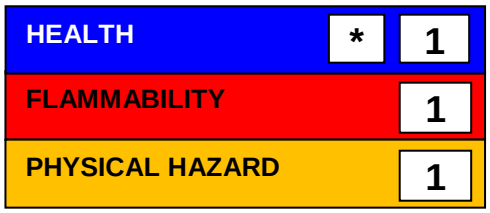
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI -

Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

ACGIH = American Conference of Governmental Industrial Hygienists. CFR = Code of Federal Regulations. EPA = Environmental Protection Agency. NIOSH = National Institute of Occupational Safety and Health. OSHA = Occupational Safety and Health Administration. STEL = Short term exposure limit. TLV = Threshold Limit Value. TLV-C = Ceiling Limit Value. TWA = Time Weighted Average.

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The information provided in this Safety Data Sheet 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

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