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**SECTION 1 - IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING**

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<b>Aprinova LLC</b> 5885 Hollis Street, Ste. 100 Emeryville, CA 94608 Main: +1 (510) 450-0761 Fax: +1 (510) 225-2645 E-mail: SDS@amyris.com	<b>EU contact:</b> <b>Penman Consulting BVBA</b> +32(0)2 305 0698 <b>OR.SDS@penmanconsulting.com</b> <b>Avenue des Artes 10, 1210 Brussels</b> <b>Belgium</b>	<b>Emergency telephone number (Chemtrec):</b> +1 (800) 424-9300 (US and Canada) +1 (703) 741-5970 (outside US and Canada)
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<b>Product identifier</b>	Hemisqualane
<b>Synonyms</b>	C <sub>13-15</sub> alkane; hydrogenated farnesene; farnesane; 2,6,10-trimethyldodecane; dodecane, 2,6,10-trimethyl; TMD
<b>Trade names</b>	Neossance™ Hemisqualane, Neossance™ Hemisqualane HF
<b>Chemical family</b>	Branched paraffinic hydrocarbons
<b>REACH Registration No.:</b>	01-2119948111-47-0001
<b>Relevant identified uses of the substance or mixture and uses advised against</b>	Used as an emollient and/or solvent in cosmetics. Not for human or animal consumption.
<b>Issue Date</b>	03 May 2019

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**SECTION 2 - HAZARDS IDENTIFICATION**

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**GHS Classification of the substance or mixture**

<b>Regulation (EC) 1272/2008</b> <b>OSHA HCS 2012</b>	Aspiration hazard - Category 1.
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**Label elements****CLP/GHS hazard pictogram**

<b>CLP/GHS signal word</b>	Danger
<b>CLP/GHS hazard statements</b>	H304 - May be fatal if swallowed and enters airways.

**CLP/GHS precautionary statements**

P102: Keep out of reach of children. P273: Avoid release to the environment. P301+P310 - If swallowed: Immediately contact a poison control center or physician. P331- Do NOT induce vomiting. P405 - Store locked up. P501 - Dispose of contents/container to location in accordance with local/regional/ national/international regulations.

**NFPA Classification:**

Health Hazard: 1; Fire Hazard: 1; Reactivity Hazard; 0

**Other hazards**

See Section 11.

**Note**

The toxicological and ecological properties of this substance have not been fully characterized.

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**SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS**

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<u>Ingredient</u>	<u>CAS #</u>	<u>EC#</u>	<u>Amount</u>	<u>GHS /CLP Classification</u>
Hemisqualane	3891-98-3	622-542-2	≥99%	AH1: H304

**Note**

See Section 16 for full text of GHS/CLP classifications. The GHS classification is based on Regulation (EC) 1272/2008 (EU CLP), 29 OSHA 1910.1200 and applicable GHS regulations (United Nations ST/SG/AC 10/30 rev 3). See Section 15 for additional clarification on CAS and regulatory status.

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**SECTION 4 - FIRST AID MEASURES**

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**Description of first aid measures**

**Immediate Medical Attention Needed**

Yes

**Eye Contact**

If easy to do, remove contact lenses, if worn. Immediately flush eyes with copious quantities of water for at least 15 minutes. If irritation occurs or persists, notify medical personnel and supervisor.

**Skin Contact**

Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.

**Inhalation**

Immediately move exposed subject to fresh air. If not breathing, give artificial respiration. If breathing is labored, administer oxygen. Immediately notify medical personnel and supervisor.

**Ingestion**

If swallowed, call a physician immediately. Do not induce vomiting unless directed by medical personnel. Do not give anything to drink unless directed by medical personnel. Never give anything by mouth to an unconscious person. Notify medical personnel and supervisor.

**Protection of first aid responders**

See Section 8 for Exposure Controls/Personal Protection recommendations.

**Most important symptoms and effects, both acute and delayed**

See Sections 2 and 11

**Indication of immediate medical attention and special treatment needed, if necessary**

Treat symptomatically and supportively. If accidental exposure occurs to an individual who is also taking one or more concomitant medications, consult the respective package or prescribing information for potential drug interactions.

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## SECTION 5 - FIREFIGHTING MEASURES

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<b>Extinguishing media</b>	Use water spray (fog), foam, dry powder, or carbon dioxide, as appropriate for surrounding fire and materials.
<b>Specific hazards arising from the substance or mixture</b>	No information identified. May emit toxic fumes of carbon monoxide and carbon dioxide.
<b>Flammability/Explosivity</b>	High airborne concentrations of finely divided organic particles can potentially explode if ignited.
<b>Advice for firefighters</b>	Wear full protective clothing and a self-contained breathing apparatus with a full facepiece operated in the pressure demand or other positive pressure mode. Decontaminate all equipment after use.

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## SECTION 6 - ACCIDENTAL RELEASE MEASURES

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<b>Personal precautions, protective equipment and emergency procedures</b>	If product is released or spilled, take proper precautions to minimize exposure by using appropriate personal protective equipment (see Section 8). Area should be adequately ventilated.
<b>Environmental precautions</b>	Do not empty into drains. Avoid release to the environment. Contact the National Response Center in case of accidental discharge to waterways that produce a sheen.
<b>Methods and material for containment and cleaning up</b>	For small spills (such as in a laboratory), soak up material with absorbent, e.g., damp paper towel, and wash spill area thoroughly with soap and water. For large spills in manufacturing, absorb liquid with an appropriate adsorbent. Do not raise dust. Eliminate ignition sources. Use only equipment suitable for use with combustible liquids. Place spill materials into a leak-proof container suitable for disposal. Dispose of material in a manner that is compliant with federal, state and local laws.
<b>Reference to other sections</b>	See Sections 8 and 13 for more information.

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## SECTION 7 - HANDLING AND STORAGE

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<b>Precautions for safe handling</b>	Avoid contact with eyes, skin and other mucous membranes. Wash thoroughly after handling. Use personal protective equipment. Avoid breathing vapor. Do not eat, drink or smoke while handling this product. Avoid prolonged or repeated exposure. Provide sufficient air exchange and/or exhaust in workrooms. Take precautionary measures against static discharges and use proper bonding and grounding procedures. Use normal preventative fire protection measures. Do not cut or weld empty containers as they may contain a residue.
<b>Conditions for safe storage including any incompatibilities</b>	Keep container tightly closed. Keep in a cool and well ventilated area away from any ignition source. To maintain product quality, do not store in heat or direct sunlight.
<b>Specific end use(s)</b>	As a solvent or emollient for cosmetics.

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## SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

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### Control Parameters

### Occupational Exposure Limits

<u>Compound</u>	<u>Issuer</u>	<u>Type</u>	<u>OEL</u>
Hemisqualane	--	--	--

<b>DNEL/PNEC Limits</b>	A DNEL/PNEC is not required. The main potential hazard from hemisqualane is from accidental ingestion and a DNEL is not required. No hazards have been identified for the environment (see Section 12).
<b>Risk Management Measures</b>	Do not ingest. If swallowed then seek immediate medical assistance. Keep away from children.
<b>Exposure/Engineering controls</b>	Provide ventilation. Use local exhaust and/or enclosure at mist/ aerosol/spray-generating points. High-energy operations such as spraying should be done within an approved emission control or containment system.
<b>Respiratory protection</b>	If adequate ventilation is unavailable, use a NIOSH approved N95 or P95 dust mask or an approved and properly fitted air-purifying respirator with organic vapor cartridge based on an assessment of risk and exposure level. Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls.
<b>Hand protection</b>	Wear nitrile or other impervious gloves if skin contact is possible.
<b>Skin protection</b>	Wear appropriate gloves, lab coat, or other protective overgarment if skin contact is likely. Base the choice of skin protection on the job activity, potential for skin contact and solvents and reagents in use.
<b>Eye/face protection</b>	Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.
<b>Environmental Exposure Controls</b>	Avoid release to the environment and operate within closed systems wherever practicable. Air and liquid emissions should be directed to appropriate pollution control devices. In case of spill, do not release to drains. Implement appropriate and effective emergency response procedures to prevent release and inadvertent contact by personnel.
<b>Other protective measures</b>	Wash hands in the event of contact with this substance, especially before eating, drinking or smoking. Protective equipment is not to be worn outside the work area (e.g., in common areas or out-of-doors). Decontaminate all protective equipment following use.

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## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

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### Information on basic physical and chemical properties

<b>Appearance</b>	Liquid
<b>Color</b>	Colorless
<b>Odor</b>	Nearly odorless
<b>Odor threshold</b>	No information identified.
<b>pH</b>	No information identified.
<b>Melting point/freezing point</b>	-70 °C (ASTM 2386-06).
<b>Initial boiling point and boiling range</b>	241-251°C at 760 mm Hg (ASTM D86)
<b>Flash point</b>	110 °C (230 °F) (ASTM D93)

<b>Evaporation rate</b>	No information identified.
<b>Flammability (solid, gas)</b>	No information identified.
<b>Upper/lower flammability or explosive limits</b>	LFL @ 25°C 0.48 (ASTM E681) UFL @25°C 7.0 (ASTM E681)
<b>Vapor pressure</b>	89.3 Pa at 20°C (ASTM 2879)
<b>Vapor density</b>	No information identified.
<b>Relative density</b>	0.77 g/cm <sup>3</sup> at 15 °C. (ASTM D4052)
<b>Water solubility</b>	0.25 µg/L (literature reference).
<b>Solvent solubility</b>	Soluble in alcohols.
<b>Partition coefficient (log) (<i>n</i>-octanol/water)</b>	>7.20 at 30 °C (OECD TG117)
<b>Auto-ignition temperature</b>	197 °C (387 °F) (ASTM E659)
<b>Decomposition temperature</b>	No information identified.
<b>Viscosity (kinematic)</b>	2.325 mm <sup>2</sup> /s @ 40 °C (ASTM D445)
<b>Explosive properties</b>	No information identified.
<b>Oxidizing properties</b>	No information identified.

#### Other information

<b>Molecular weight</b>	212.41
<b>Molecular formula</b>	C <sub>15</sub> H <sub>32</sub>

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### SECTION 10 - STABILITY AND REACTIVITY

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<b>Reactivity</b>	No information identified.
<b>Chemical stability</b>	Stable under normal handling and storage conditions.
<b>Possibility of hazardous reactions</b>	Not expected to occur.
<b>Conditions to avoid</b>	Keep away from heat, sparks, and open flame.
<b>Incompatible materials</b>	Strong oxidizers.
<b>Hazardous decomposition products</b>	No information identified.

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### SECTION 11 - TOXICOLOGICAL INFORMATION

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#### Information on toxicological effects

**Route of entry** May be absorbed by inhalation, skin contact and ingestion.

#### Acute toxicity

<u>Compound</u>	<u>Type</u>	<u>Route</u>	<u>Species</u>	<u>Dose</u>
Farnesane	LC <sub>50</sub>	Inhalation	Rat	>2.19 mg/L
	LD <sub>50</sub>	Oral	Rat	> 5000 mg/kg
	LD <sub>50</sub>	Dermal	Rabbit	> 5000 mg/kg

<b>Irritation/Corrosion</b>	Hemisqualane may cause dermal irritation. In <i>in vitro</i> eye and skin tests (MatTek Epiocular™ MTT viability assay, MatTek Epiderm™ skin irritation test) hemisqualane was non-irritating. In human 48 hour patch testing, hemisqualane was considered non-irritating. In HRIPT, irritation was noted as the pure substance under highly localized and occluded conditions. At lower concentrations or with open application, mild to no irritation was observed; no irritation was observed at concentrations of up to 60%.
<b>Sensitization</b>	In three human repeated patch studies, hemisqualane was not considered to be a sensitizer ranging from concentrations of 20% to 80%. Farnesane was not sensitizing by the Local Lymph Node Assay (in concentrations up to 40%).
<b>STOT-single exposure</b>	No studies identified.
<b>STOT-repeated exposure/Repeat-dose toxicity</b>	Repeat dose study at farnesane dose levels 100, 300 and 1000 mg/kg bw/day for 90 days in rat (OECD 408) resulted no significant adverse effects (NOEL of 1000 mg/kg bw/day).
<b>Reproductive toxicity</b>	See below.
<b>Developmental toxicity</b>	Pre-natal developmental toxicity studies with farnesane in pregnant rats treated for up to 20 days at dose levels of 100 , 300 and 1000 mg/kg bw/day (OECD 414) showed no treatment related adverse effects (NOEL 1000 mg/kg bw/day).
<b>Genotoxicity</b>	Negative in an Ames bacterial cell mutagenicity assay, mouse lymphoma assay, and chromosome aberration study.
<b>Carcinogenicity</b>	No studies identified. This substance is not listed by NTP, IARC, ACGIH or OSHA as a carcinogen.
<b>Aspiration hazard</b>	Considered to be an aspiration hazard based on kinematic viscosity.
<b>Human health data</b>	See Irritation and Sensitization sections.
<b>Additional information</b>	Substance not yet fully tested.

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## SECTION 12 - ECOLOGICAL INFORMATION

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<b>Aquatic Toxicity</b>	Hemisqualane is not classified for acute or chronic toxicity to aquatic species. Hemisqualane is essentially insoluble in water (0.25 µg/L) and is not expected to hydrolyse. Farnesane was tested in chronic fish and daphnia studies and no toxicity occurred at the limit of water solubility (0.25 µg/L).
<b>Additional toxicity information</b>	Based on the results from similar substances, hemisqualane is not expected to inhibit the activity of sewage sludge micro-organisms.
<b>Persistence and Degradability</b>	In CO <sub>2</sub> -evolution ready biodegradability tests (OECD301B), hemisqualane degradation was between 12-44% by 28 days. In addition, modelled data (BioHCWin v1.01), predict that hemisqualane will be inherently biodegradable and that its half-life is 22 days. The measured half-life in a seawater biodegradation study was 3.5 days (CONCAWE).
<b>Bioaccumulative potential</b>	Predicted range 1074 to 1944 L/kg wet-wt by modelling (EpiSuite v4.11 and BCFBAF v3.01). Based on predicted values of less than 2000 L/kg wet-wt hemisqualane is not expected to bioaccumulate.
<b>Mobility in soil</b>	Not expected to be mobile in soil. Predicted log Koc: 6.5 (Kowwin method)
<b>Results of PBT and vPvB assessment</b>	Based on the chemical safety assessment and the results described herein, hemisqualane is not a PBT / vPvB substance.

<b>Other adverse effects</b>	No data available.
<b>Note</b>	The environmental characteristics of this substance have not been fully investigated. Releases to the environment should be avoided.

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## SECTION 13 - DISPOSAL CONSIDERATIONS

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<b>Waste treatment methods</b>	Used product should be disposed of according to local, state, and federal regulations. Do not send down the drain or flush down the toilet. All wastes containing the material should be properly labeled. Dispose of wastes in accordance to prescribed federal, state, and local guidelines, e.g., appropriately permitted chemical waste incinerator. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g., appropriately permitted municipal or on-site wastewater treatment facility.
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## SECTION 14 - TRANSPORT INFORMATION

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<b>Transport</b>	Based on the available data, this substance is not regulated as a hazardous material/dangerous good under EU ADR/RID, US DOT, Canada TDG, IATA, or IMDG.
<b>UN number</b>	None assigned.
<b>UN proper shipping name</b>	None assigned.
<b>Transport hazard classes and packing group</b>	None assigned.
<b>Environmental hazards</b>	Based on the available data, this substance is not regulated as an environmental hazard or a marine pollutant.
<b>Special precautions for users</b>	Avoid exposure and releases to the environment.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.

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## SECTION 15 - REGULATORY INFORMATION

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<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	This SDS complies with the requirements under US, EU and GHS (EU CLP - Regulation EC No 1272/2008) guidelines. Consult your local or regional authorities for more information.
<b>Chemical safety assessment</b>	Conducted.
<b>OSHA Hazardous</b>	Harmful or fatal if swallowed. Can enter lungs and cause damage.
<b>WHMIS classification</b>	This SDS contains the information required by WHMIS 2015 regulations.
<b>US FDCA</b>	C <sub>13-15</sub> alkane.
<b>US TSCA status</b>	Listed on the TSCA inventory as Dodecane, 2,6,10-trimethyl-
<b>EU REACH</b>	REACH registration number: 01-2119948111-47-0001
<b>China 2014 IECIC</b>	C <sub>13-15</sub> alkane
<b>SARA section 313</b>	Not listed.
<b>California proposition 65</b>	Not listed.

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## SECTION 16 - OTHER INFORMATION

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**Full text of H phrases, P phrases and GHS classification**

AH1- Aspiration Hazard - Category 1 H304 - May be fatal if swallowed and enters airways.

**Sources of data**

Information from published literature and internal company data.

**Abbreviations**

ACGIH - American Conference of Governmental Industrial Hygienists ADR/RID - European Agreement Concerning the International Carriage of Dangerous Goods by Road/Rail AIHA - American Industrial Hygiene Association CAS# - Chemical Abstract Services Number CLP - Classification, Labelling, and Packaging of Substances and Mixtures DNEL - Derived No Effect Level DOT - Department of Transportation EINECS - European Inventory of New and Existing Chemical Substances ELINCS - European List of Notified Chemical Substances

EU - European Union GHS - Globally Harmonized System of Classification and Labelling of Chemicals HRIPT – Human Repeated Insult Patch Test IARC - International Agency for Research on Cancer IDLH - Immediately Dangerous to Life or Health IATA - International Air Transport Association IMDG - International Maritime Dangerous Goods LOEL - Lowest Observed Effect Level LOAEL - Lowest Observed Adverse Effect Level NIOSH - The National Institute for Occupational Safety and Health NOEL - No Observed Effect Level NOAEL - No Observed Adverse Effect Level NTP - National Toxicology Program OEL - Occupational Exposure Limit OSHA - Occupational Safety and Health Administration PBT - Persistent, Bioaccumulative and Toxic PNEC - Predicted No Effect Concentration SARA - Superfund Amendments and Reauthorization Act STEL - Short Term Exposure Limit TDG - Transport Dangerous Goods TSCA - Toxic Substances Control Act TWA - Time Weighted Average WHMIS - Workplace Hazardous Materials Information System

**Revisions**

This is the third version of this SDS for Aprinova.

**Disclaimer**

The above information is based on data available to us and is believed to be correct. Since the information may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of its use and all persons receiving it must make their own determination of the effects, properties and protections which pertain to their particular conditions. No representation, warranty, or guarantee, express or implied (including a warranty of fitness or merchantability for a particular purpose), is made with respect to the materials, the accuracy of this information, the results to be obtained from the use thereof, or the hazards connected with the use of the material. Caution should be used in the handling and use of the material because it is a chemical substance. The above information is offered in good faith and with the belief that it is accurate. As of the date of issuance, we are providing all information relevant to the foreseeable handling of the material. However, in the event of an adverse incident associated with this product, this Safety Data Sheet is not, and is not intended to be, a substitute for consultation with appropriately trained personnel.