



## SAFETY DATA SHEET

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

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Novvi LLC  
5885 Hollis Street, Ste. 100  
Emeryville, CA 94608  
Main: +1 (510) 450-0761  
Fax: +1 (510) 225-2645  
E-mail: SDS@novvi.com

**Emergency telephone number (Chemtrec):**  
CCN693486

1-(800) 424-9300 (US and Canada)  
1-(703) 527-3887 (Collect calls accepted)

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<b>Product identifier</b>	NovaSolv 100/110
<b>Synonyms</b>	Proprietary
<b>Trade names</b>	Not applicable
<b>Chemical family</b>	Branched and linear olefinic hydrocarbons
<b>Relevant identified uses of the substance or mixture and uses advised against</b>	Not for human or animal consumption.

**Issue Date** 14 June 2017

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### SECTION 2 - HAZARDS IDENTIFICATION

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**US Signal word** Danger

**US Hazard overview** This mixture is classified as an aspiration hazard.

**TSCA Label Text** Use in compliance with TSCA Regulation 40 CFR 720.36. The sample label and this safety data sheet contain the required health and safety information under 40 CFR 720.36.

**OSHA Label Text** Danger. May be fatal if swallowed and enters airways. If swallowed: Immediately call a poison control center or a doctor. Do NOT induce vomiting. Keep away from flames and hot surfaces. No smoking. Wear protective gloves/eye protection/face protection. In case of fire, use carbon dioxide extinguisher. Do not use water. Store locked up. Store in a well-ventilated place. Keep cool. Dispose of contents/container in accordance with local/national/international regulations.

**GHS Classification of the substance or mixture**

**Regulation (EC) 1272/2008 [GHS]** Substance not yet fully tested.

## Label elements

### CLP/GHS hazard pictogram



**CLP/GHS signal word**      Danger

**CLP/GHS hazard statements**      H304 - May be fatal if swallowed and enters airways.

**CLP/GHS precautionary statements**      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**      This mixture should be considered hazardous according to Regulation (EC) No 1272/2008 (EU CLP) and United Nations ST/SG/AC 10/30 rev 3 GHS Regulations. The pharmacologic and toxicologic properties of this mixture have not been fully characterized. See Section 16 for full text of GHS classifications.

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## SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

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<u>Ingredient</u>	<u>CAS #</u>	<u>Percent</u>	<u>Classification</u>
1,6,10-Dodecatriene, 7,11-dimethyl-3-methylene-, (6E)-, hydrogenated	1581740-29-5	15-55%	H304
Farnesane	3891-98-3	25-65%	H304
Dodec-1-ene	112-41-4	0-35%	H304
Tetradec-1-ene	1120-36-1	0-35%	H304
Hexadec-1-ene	629-73-2	0-35%	H304
Alkenes, C10-16 -, mixed with (6E)-7,11-dimethyl-3-methylene-1,6,10- dodecatriene, dimers and trimers hydrogenated	1472005-85-8	0-10%	H304

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## SECTION 4 - FIRST AID MEASURES

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### Description of first aid measures

**Immediate Medical Attention Needed**      Yes

<b>Eye Contact</b>	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.
<b>Skin Contact</b>	Wash exposed area with soap and water and remove contaminated clothing/shoes. If irritation occurs or persists, notify medical personnel and supervisor.
<b>Inhalation</b>	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.
<b>Ingestion</b>	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.
<b>Protection of first aid responders</b>	See Section 8 for Exposure Controls/Personal Protection recommendations.
<b>Most important symptoms and effects, both acute and delayed</b>	See Sections 2 and 11
<b>Indication of immediate medical attention and special treatment needed, if necessary</b>	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. Vapors may form explosive mixtures with air.
<b>Flammability/Explosivity</b>	No explosivity or flammability data identified. High airborne concentrations of finely divided organic particles can potentially explode if ignited. In a fire or if heated, a pressure increase will occur and the container may burst.
<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.

**Methods and material for containment and cleaning up** 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, use an industrial vacuum cleaner equipped with a high efficiency particulate (HEPA) filter if available. Alternatively if in solid or dried form, do not raise dust. Surround spill or powder with absorbents and place a damp cloth or towel over the area to minimize powder from entering the air. Use care in the choice of absorbents as some may react and generate excess heat and create a risk of fire. Review safety data sheets of absorbents prior to use. Add excess liquid to allow for the material to enter solution. Capture remaining liquid onto spill absorbents. Place spill materials into a leak-proof container suitable for disposal. Decontaminate area a second time. Dispose of material in a manner that is compliant with federal, state and local laws.

**Reference to other sections** See Sections 8 and 13 for more information.

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## **SECTION 7 - HANDLING AND STORAGE**

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**Precautions for safe handling** 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. Use normal preventative fire protection measures.

**Conditions for safe storage including any incompatibilities** 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.

**Specific end use(s)** No information identified.

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## **SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION**

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**Exposure/Engineering controls** Selection and use of containment devices and personal protective equipment should be based on a risk assessment of exposure potential. 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>	Choice of respiratory protection should be appropriate to the task and the level of existing engineering controls. An approved and properly fitted air-purifying respirator with HEPA filters should provide ancillary protection based on the known or foreseeable limitations of existing engineering controls. Use a powered air-purifying respirator equipped with HEPA filters or combination filters or a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, when exposure levels are not known, or in any other circumstances where a lower level of respiratory protection may not provide adequate protection.
<b>Hand protection</b>	Wear nitrile or other impervious gloves if skin contact is possible. When the material is dissolved or suspended in an organic solvent, wear gloves that provide protection against the solvent.
<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 or spread of contamination and to prevent inadvertent contact by personnel.
<b>Other protective measures</b>	Wash hands in the event of contact with this mixture, 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 to pale-yellow
<b>Odor</b>	Paraffinic
<b>Odor threshold</b>	No information identified.
<b>pH</b>	No information identified.
<b>Melting point/freezing point</b>	No information identified.

<b>Initial boiling point and boiling range</b>	230°C (396 °F) at 1 atm (760 mm Hg)
<b>Flash point</b>	103 °C (217 °F) Cleveland Open Cup
<b>Evaporation rate</b>	No information identified.
<b>Flammability (solid, gas)</b>	No information identified.
<b>Upper/lower flammability or explosive limits</b>	No information identified.
<b>Vapor pressure</b>	No information identified.
<b>Vapor density</b>	No information identified.
<b>Relative density</b>	0.775 g/mL @ 20°C.
<b>Water solubility</b>	Insoluble.
<b>Solvent solubility</b>	No information identified.
<b>Partition coefficient (n-octanol/water)</b>	No information identified.
<b>Auto-ignition temperature</b>	No information identified.
<b>Decomposition temperature</b>	No information identified.
<b>Viscosity</b>	1.0-2.4 mm <sup>2</sup> /s at 40°C.
<b>Explosive properties</b>	No information identified.
<b>Oxidizing properties</b>	No information identified.
<b>Other information</b>	
<b>Molecular weight</b>	Proprietary
<b>Molecular formula</b>	Proprietary

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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 and open flames.
<b>Incompatible materials</b>	Avoid strong oxidizers, strong acids and strong bases.
<b>Hazardous decomposition products</b>	Carbon oxides (CO, CO <sub>2</sub> )

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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>
1,6,10-Dodecatriene, 7,11-dimethyl-3-methylene-, (6E)-, hydrogenated	--	--	--	--
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
Dodec-1-ene	--	--	--	--
Tetradec-1-ene	--	--	--	--
Hexadec-1-ene	--	--	--	--
Alkenes, C10-16 -, reaction products with (6E)-7,11-dimethyl-3-methylene-1,6,10- dodecatriene, dimers and trimers hydrogenated	None	None	None	None

**Irritation/Corrosion**

In rabbits, farnesane was not considered an irritant under GHS or CLP. In *in vitro* eye and skin tests (MatTek Epiocular™ MTT viability assay, MatTek Epiderm™ skin irritation test) farnesane was non-irritating. In human 48 hour patch testing, farnesane 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%.

**Sensitization**

In three human repeated patch studies, farnesane was not considered to be a sensitizer ranging from concentrations of 20% to 80%.

**STOT-single exposure**

No studies identified.

**STOT-repeated exposure**

No studies identified.

**Reproductive toxicity**

No studies identified.

**Developmental toxicity**

No studies identified.

**Genotoxicity**

Negative in an Ames bacterial cell mutagenicity assay. Not clastogenic at non-precipitating doses with or without metabolic activation in Chromosome aberration study.

**Carcinogenicity**

No studies identified. This mixture is not listed by NTP, IARC, ACGIH or OSHA as a carcinogen.

**Aspiration hazard**

Considered an aspiration hazard based on kinematic viscosity.

**Human health data**

See Irritation and Sensitization sections.

**Additional information**

Substance not fully tested.

## SECTION 12 - ECOLOGICAL INFORMATION

**Toxicity** Farnesane is not classified for acute or chronic toxicity to aquatic species. Farnesane is essentially insoluble in water (0.25 µg/L) and is not expected to hydrolyze. It was tested in chronic fish and daphnia studies and no toxicity occurred at the limit of water solubility (0.25 µg/L)

<u>Compound</u>	<u>Type</u>	<u>Species</u>	<u>Concentration</u>
1,6,10-Dodecatriene, 7,11-dimethyl-3-methylene-, (6E)-, hydrogenated Farnesane	--	--	--
	96hEC50	<i>Pseudokirchneriella subcapitata</i>	>86 ug/L
	NOEC (21 day)	<i>Pimephales promelas</i>	66 ug/L
	NOEC (21 day)	<i>Daphnia magna</i>	54 ug/L
Dodec-1-ene	72hEC50	Algae	>0.00093 mg/L
	48hEC50	Daphnia	(solubility)
	96hLC50	Fish	>0.0028 mg/L (solubility)
			>0034 mg/L (solubility)
Tetradec-1-ene	72hEL50	Aquatic plants	>1000 mg/L
	48hEL50	Daphnia	>1000 mg/L
	96hLL50	Fish	>1000 mg/L
	28NOEC	Microorganism	2 mg/L
Hexadec-1-ene	72hEL50	Aquatic plants	>1000 mg/L
	48hEL50	Daphnia	<1000 mg/L
	96hLL50	Fish	>1000 mg/L
	28dEC20	Microorganism	>4 mg/L
Alkenes, C10-16 -, reaction products with (6E)-7,11-dimethyl-3-methylene-1,6,10- dodecatriene, dimers and trimers, hydrogenated	48hEL50	Daphnia	>100 mg/L WAF

**Additional toxicity information** Based on the results from similar substances, farnesane is not expected to inhibit the activity of sewage sludge micro-organisms.

**Persistence and Degradability** In CO<sub>2</sub>-evolution ready biodegradability tests (OECD301B), farnesane degradation was between 12-44% by 28 days. In addition, modelled data (EpiSuite v 4.11, BIOWIN v4.10 and BioHCWin v1.01), predict that farnesane will not be readily biodegradable, that it will be ultimately biodegradable in a period of weeks to months and that its half-life is 22 days. The measured half life in a seawater biodegradation study was 3.5 days (CONCAWE). Dodec-1-ene, tetradec-1-ene and hexadec-1-ene are readily biodegradable and show a low bioaccumulation potential.

**Bioaccumulative potential** Farnesane 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 farnesane is not expected to bioaccumulate.

**Mobility in soil** Not expected to be mobile in soil. Predicted log K<sub>oc</sub>: 5.8-6.6 (Kowwin method)



<b>Results of PBT and vPvB assessment</b>	Based on the chemical safety assessment and the results described herein, farnesane is not a PBT / vPvB substance.
<b>Other adverse effects</b>	No data available.
<b>Note</b>	The environmental characteristics of this mixture 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 mixture 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>Environmental hazards</b>	Based on the available data, this product/mixture 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 and UN ST/SG/AC 10/30 rev 3) guidelines.
<b>Chemical safety assessment</b>	Conducted.
<b>OSHA Hazardous</b>	Yes. Harmful or fatal if swallowed. Can enter lungs and cause damage. Mixture not fully tested.
<b>WHMIS classification</b>	This substance does not meet any of the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.
<b>TSCA status</b>	All components are listed on the TSCA inventory.
<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

**NFPA Classification:**

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

**Sources of data  
Abbreviations**

Information from published literature and internal company data.  
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 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 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

**Abbreviations ...continued**

TDG - Transport Dangerous Goods TSCA - Toxic Substances Control Act TWA - Time Weighted Average WHMIS - Workplace Hazardous Materials Information System

**Revisions**

Rev 3.3. New product name

**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 pharmaceutical product. 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.