

## Safety Data Sheet

### D-Limonene

Version 1.0

Revision Date: 09/11/2014

#### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product name** : D-Limonene  
**Product Use Description** : industrial chemical

#### Manufacturer or supplier's details

**Company** : Nexeo Solutions LLC  
**Address** : 3 Waterway Square Place Suite 1000  
 Woodlands, Tx. 77380  
 United States of America

#### Emergency telephone number:

Health North America: 1-855-NEXEO4U (1-855-639-3648)

Health International: 1-855-NEXEO4U (1-855-639-3648)

Transport North America: CHEMTREC 800.424.9300

**Additional Information:** : Responsible Party: Product Safety Group  
 E-Mail: msds@nexeosolutions.com  
 MSDS Requests: 1-855-429-2661  
 MSDS Requests Fax: 1-281-500-2370  
 Website: www.nexeosolutions.com

#### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable liquids : Category 3  
 Skin irritation : Category 2  
 Eye irritation : Category 2A  
 Skin sensitisation : Category 1  
 Aspiration hazard : Category 1

#### GHS Label element

Hazard pictograms : 

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.  
 H304 May be fatal if swallowed and enters airways.  
 H315 Causes skin irritation.

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H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

Precautionary statements : **Prevention:**

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/ eye protection/ face protection.

**Response:**

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P331 Do NOT induce vomiting.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P362 Take off contaminated clothing and wash before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

**Storage:**

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

**Disposal:**

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

#### Potential Health Effects

##### Carcinogenicity:

###### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible

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or confirmed human carcinogen by IARC.

#### ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

#### OSHA

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### 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.

#### Emergency Overview

Appearance	liquid
Colour	colourless, light yellow
Odour	characteristic, of oranges
Hazard Summary	No information available.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

#### Hazardous components

CAS-No.	Chemical Name	Concentration (%)
5989-27-5	d-Limonene	0 - 100
94266-47-4	Citrus terpenes	0 - 100

#### Synonyms

: Citrus Stripper Oil, Terpene Hydrocarbons, Technical Grade d-Limonene,

### SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Symptoms of poisoning may appear several hours later.  
Do not leave the victim unattended.

If inhaled : If unconscious place in recovery position and seek medical advice.

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	If symptoms persist, call a physician.
In case of skin contact	: If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.
In case of eye contact	: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	: Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

#### SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Alcohol-resistant foam Carbon dioxide (CO <sub>2</sub> ) Dry chemical
Unsuitable extinguishing media	: High volume water jet
Specific hazards during firefighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	: Carbon monoxide Carbon dioxide (CO <sub>2</sub> )
Specific extinguishing methods	: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Use a water spray to cool fully closed containers.
Further information	: Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary.

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#### **NFPA Flammable and Combustible Liquids Classification:**

Combustible Liquid Class II

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Environmental precautions	: Prevent product from entering drains. 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	: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

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### SECTION 7. HANDLING AND STORAGE

Advice on safe handling	: Avoid formation of aerosol. Do not breathe vapours/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
Conditions for safe storage	: No smoking.

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rage

Keep container tightly closed in a dry and well-ventilated place.  
Containers which are opened must be carefully re-sealed and kept upright to prevent leakage.  
Observe label precautions.  
Electrical installations / working materials must comply with the technological safety standards.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
5989-27-5	d-Limonene	TWA	20 ppm	ACGIH

### Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection  
Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : impervious clothing  
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.  
Wash hands before breaks and at the end of workday.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : colourless, light yellow

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Odour	: characteristic, of oranges
Odour Threshold	: not determined
pH	: not applicable
Freezing Point (Melting point/range)	: -96 °C (-141 °F) (1013 hPa)
Boiling Point (Boiling point/boiling range)	: 175 - 177 °C (347 - 351 °F) (1013 hPa)
Flash point	: 43 °C (109 °F)
Evaporation rate	: 0.2 n-Butyl Acetate
Flammability (solid, gas)	: No data available
Burning rate	: No data available
Upper explosion limit	: 6.1 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: < 2 mmHg @ 20 °C (68 °F)
Relative vapour density	: 4.7
Relative density	: 0.838 - 0.843 @ 25 °C (77 °F)
Density	: No data available
Bulk density	: No data available
Solubility(ies)	
Water solubility	: insoluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Auto-ignition temperature	: 237 °C
Thermal decomposition	: No data available

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#### SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Vapours may form explosive mixture with air. Stable under normal conditions.
Conditions to avoid	: Keep away from heat, flame, sparks and other ignition sources. Exposure to air. Possible emission of gaseous decomposition products may lead to a dangerous pressure build-up.
Incompatible materials	: Avoid contact with: halogens peroxides Strong acids Strong oxidizing agents acidic clays vinyl chloride iodine pentafluoride
Hazardous decomposition products	: acrid smoke and fumes

#### SECTION 11. TOXICOLOGICAL INFORMATION

##### Acute toxicity

##### Product:

Acute oral toxicity	: Acute toxicity estimate : 2,340 mg/kg Method: Calculation method
Acute dermal toxicity	: Acute toxicity estimate : 5,000 mg/kg Method: Calculation method

##### Components:

##### **5989-27-5:**

Acute oral toxicity	: LD50 (rat): 4,400 mg/kg Assessment: The component/mixture is low toxic after single ingestion.
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Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : LD50 (rabbit): > 5,000 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

**94266-47-4:**

Acute oral toxicity : LD50 (rabbit): > 5,000 mg/kg

Acute inhalation toxicity : RD50 (mouse): 1 mg/l

Acute dermal toxicity : LD50 (rabbit): > 5,000 mg/kg

#### Skin corrosion/irritation

**Product:**

Remarks: May cause skin irritation and/or dermatitis.

**Components:**

**5989-27-5:**

Species: rabbit

Result: Irritating to skin.

**94266-47-4:**

Species: guinea pig

Result: Mild skin irritation

#### Serious eye damage/eye irritation

**Product:**

Remarks: Irritating to eyes.

**Components:**

**5989-27-5:**

Species: rabbit

Result: No eye irritation

**94266-47-4:**

Species: rabbit

Result: Eye irritation

#### Respiratory or skin sensitisation

**Components:**

**5989-27-5:**

Test Type: lymph node assay

Species: mouse

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Result: May cause sensitisation by skin contact.

#### 94266-47-4:

Assessment: The product is a skin sensitiser, sub-category 1B.

Result: The product is a skin sensitiser, sub-category 1B.

### Germ cell mutagenicity

#### Components:

##### 5989-27-5:

Genotoxicity in vitro : Test Type: Mammalian cell gene mutation assay  
Test species: mouse lymphoma cells  
Metabolic activation: with and without metabolic activation  
Result: negative

Genotoxicity in vivo : Test Type: DNA damage and/or repair  
Test species: rat  
Cell type: Kidney cells  
Application Route: Oral  
Result: negative

Germ cell mutagenicity-Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

### Carcinogenicity

#### Components:

##### 5989-27-5:

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

### Reproductive toxicity

#### Components:

##### 5989-27-5:

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, and on development, based on animal experiments.

### STOT - single exposure

#### Product:

No data available

#### Components:

No data available

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Components:

No data available

**STOT - repeated exposure**

Product:

No data available

Components:

No data available

Components:

No data available

**Repeated dose toxicity**

**Components:**

**5989-27-5:**

Species: mouse

LOAEL: 3,300 mg/kg

Application Route: Oral

Exposure time: 16 d

**Aspiration toxicity**

**Components:**

**5989-27-5:**

May be fatal if swallowed and enters airways.

**94266-47-4:**

May be fatal if swallowed and enters airways.

**Further information**

**Product:**

Remarks: Solvents may degrease the skin.

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## SECTION 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Components:**

**5989-27-5:**

Toxicity to fish

: LC50 (Pimephales promelas (fathead minnow)): 0.702

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	mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 0.36 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae	: EC50 (Desmodesmus subspicatus (green algae)): 150 mg/l Exposure time: 72 h Test Type: static test
M-Factor (Acute aquatic toxicity)	: 1
Ecotoxicology Assessment	
Acute aquatic toxicity	: Very toxic to aquatic life.
Chronic aquatic toxicity	: Very toxic to aquatic life with long lasting effects.

#### Persistence and degradability

##### **Product:**

Biodegradability : Result: Readily biodegradable.

##### **Components:**

###### **5989-27-5:**

Biodegradability : aerobic  
Concentration: 0.6 mg/l  
Result: Readily biodegradable.

###### **94266-47-4:**

Biodegradability : Result: Readily biodegradable.

#### Bioaccumulative potential

##### **Components:**

###### **5989-27-5:**

Partition coefficient: n-octanol/water : log Pow: 4.57

log Pow: 4.38 (37 °C)  
pH: 7.2

###### **94266-47-4:**

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

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#### Mobility in soil

No data available

#### Other adverse effects

No data available

#### Product:

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

: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life with long lasting effects.

## SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

Waste from residues

: Dispose of in accordance with all applicable local, state and federal regulations.  
For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact NEXEO's Environmental Services Group at 800-637-7922.

The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.

Contaminated packaging

: Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.  
Do not burn, or use a cutting torch on, the empty drum.

## SECTION 14. TRANSPORT INFORMATION

**IATA (International Air Transport Association):** UN2319, TERPENE HYDROCARBONS, N.O.S., 3 , III

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**IMDG (International Maritime Dangerous Goods):** UN2319, TERPENE HYDROCARBONS, N.O.S., 3, III, Flash Point: 43 °C (109 °F)

**DOT (Department of Transportation):** UN2319, TERPENE HYDROCARBONS, N.O.S., 3, III

#### SECTION 15. REGULATORY INFORMATION

**OSHA Hazards** : Combustible Liquid, Moderate skin irritant, Moderate eye irritant

#### 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 311/312 Hazards** : Fire Hazard  
Acute Health Hazard

**SARA 302** : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** : 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 does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (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 SOCOMI 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. Clean Water Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. Clean Water Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

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#### US State Regulations

##### Massachusetts Right To Know

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

##### Pennsylvania Right To Know

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94266-47-4	Citrus terpenes	0 - 100 %

##### New Jersey Right To Know

5989-27-5	d-Limonene	0 - 100 %
94266-47-4	Citrus terpenes	0 - 100 %

##### California Prop 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

#### The components of this product are reported in the following inventories:

<b>United States TSCA Inventory</b>	:	y (positive listing) (On TSCA Inventory)
<b>Canadian Domestic Substances List (DSL)</b>	:	y (positive listing) (On the inventory, or in compliance with the inventory)

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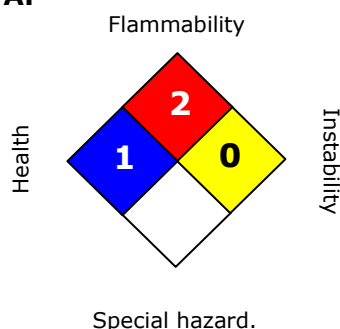
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#### SECTION 16. OTHER INFORMATION

##### Further information

##### NFPA:



##### HMIS III:

<b>HEALTH</b>	<b>1</b>
<b>FLAMMABILITY</b>	<b>2</b>
<b>PHYSICAL HAZARD</b>	<b>0</b>

0 = not significant, 1 =Slight,  
2 = Moderate, 3 = High  
4 =Extreme, \* = Chronic

The information accumulated is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made become available subsequently to the date hereof, we do not assume any responsibility for the results of its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by NEXEO™ Solutions EHS Product Safety Department (1-855-429-2661) MSDS@nexeosolutions.com.

**Legacy MSDS:** R0111643

##### Material number:

16056013, 16056014, 16056042, 16056012, 16062075, 16037740, 16013558, 763681, 728284, 554323, 554287, 554254, 554210, 554139, 70604, 508584, 86747, 103445, 103341, 104220, 55064, 103335, 103451, 102799, 69374, 86953, 70040, 54193, 87063, 139240, 504369, 20823, 20822, 70685, 87227

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals



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EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50			Lethal Concentration 50%