Safety Data Sheet

The Natural Choice for Flavor and Fragrance Ingredients

HEALTH	2
FLAMMABILITY	2
REACTIVITY	0

Section 1: PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product Name	**D-Limonene, Natural**
Product Number	**0263300**
CAS-No.	**5989-27-5**

1.2 Product Recommended Use **Flavorings**

1.3 Preparation Information

Company	Aurochemicals 7 Nicoll Street Washingtonville, NY 10992
Telephone	845-496-6065
Fax	845-496-6248

1.4 **Emergency Telephone Number** 1-800-535-5053
International - 1-352-323-3500 collect

Section 2: HAZARD(s) IDENTIFICATION

2.1 Classification of substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids (Category 3), H226
Skin irritation (Category 2), H315
Skin sensitisation (Category 1), H317
Aspiration hazard (Category 1), H304
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1) , H410

2.2 GHS Label Elements, Including precautionary statements

Pictogram

Signal Statement **DANGER**

Hazard Statement(s)

H226 Flammable liquid and vapor
H304 May be fatal if swallowed and enters airways
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H410 Very toxic to aquatic life with long lasting effects

Precautionary Statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces – 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/vapors/spray
P264	Wash skin thoroughly after handling
P272	Contaminated work clothing should not b allowed out of the workplace
P273	Avoid release to the environment
P280	Wear protective gloves/protective clothing/eye protection/face protection
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
P331	Do NOT induce vomiting
P333+P313	If skin irritation or rash occurs. 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
P391	Collect spillage
P403+P235	Store in a well ventilated place. Keep cool
P405	Store locked up
P501	Dispose of contents/container to an approved waste disposal plant.

2.3 HNOC (Hazards not otherwise classified or not covered by GHS –None

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Formula	$C_{10}H_{16}$
Molecular Weight	136.24 g/mol
CAS-No	5989-27-5
EC-No.	227-813-5
Index No.	601-029-00-7

Hazardous Components

Component	Classification	Concentration
D-Limonene	Flammable liquids (3), H226 Skin irritation (2), H315 Skin sensitisation (1), H317 Aspiration hazard (1), H304 Acute aquatic toxicity (1), H400 Chronic aquatic toxicity (1) , H410	90-100%

Section 4: FIRST AID MEASURES

4.1 Description of first aid measures

General advice	Consult physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area
Inhalation	Provide fresh air; keep at rest and at a comfortable position to breathe. Consult a physician
Contact with skin:	Remove contaminated clothing. Rinse skin with cool water then wash with mild soap and warm water and contact a physician.
Contact with eyes:	Rinse thoroughly with plenty of water for at least 15 as a precaution and consult a physician.

	Ingestion	DO NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
	Clothing contamination:	Remove contaminated clothing and wash before reuse.
4.2	**Most important symptoms and effects both acute and delayed**	See section 2.2 and or section 11
4.3	**Indication of any immediate medical attention and special treatment needed.**	No data available

Section 5: FIREFIGHTING MEASURES

5.1	**Extinguishing Media**	
	Suitable Extinguishing Media	For small (incipient) fires, use media such as alcohol foam, dry chemical, or carbon dioxides. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
5.2	**Special hazards arising from the substance or mixture**	Carbon oxides
5.3	**Advice for fire fighters**	Wear self contained breathing apparatus for firefighting if necessary. Emits toxic fumes under fire conditions
5.4	**Further information**	Use water spray to cool unopened containers

Section 6: ACCIDENTIAL RELEASE MEASURES

6.1	**Personal precautions, protective equipment and emergency procedures**	Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe area. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
6.2	**Environment precautions**	Prevent further leakage or spillage if safe to do so. Do not allow to enter drains or sewage system.
6.3	**Methods and materials for containment and clean up**	Contain spillage. Sweep up with broom and shovel. Place in a suitable, closed container for disposal.
6.4	**Specific end use(s)**	Apart from the uses mentioned in section 1.2, no other specific uses are stipulated.

Section 7: HANDLING AND STORAGE

7.1	**Precautions for safe handling**	Avoid contact with skin and eyes and clothing. Avoid Inhalation of vapor or mist. Keep away from sources of ignition-No Smoking. Take measures to prevent the buildup of electrostatic charge.
7.2	**Conditions for Safe storage**	Keep container tightly closed in a cool, dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
7.3	**Specific End use(s)**	Flavorings

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters
Contains substances with occupational exposure limit values

Component	CAS-No.	Value	Control Parameters	Basis
D-Limonene	5989-27-5	TWA	20 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Central Nervous System impairment Upper Respiratory Tract irritation Lung damage Skin irritation Not classified as a human carcinogen Sensitiser		

8.2 Exposure Controls

Appropriate Engineering Controls

Avoid contact with skin, eyes and clothing.
Handle in accordance with good industrial hygiene and safety practices.
Wash hands immediately after handling the product; before breaks and at the end of the day.

Personal protective equipment

These recommendations are advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situations of anticipated use by our customers. They should not be construed as offering an approval or any specific use scenario.

Eye/face protection: Wear appropriate safety glasses with side shields. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin protection: Wear chemically resistant, Nitrile rubber gloves, 0.4mm, when handling this product. Use proper glove removal techniques (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use. Wash and dry hands.

Body protection: Impervious clothing of flame retardant antistatic material, protecting against chemicals, should be selected specifically for the work place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: Where risk assessment shows air purifying respirators are appropriate use a full face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a back up to engineering controls. If the respirator is the sole means of protection, use a full face supplied air respirator. Use respirators and components tested and approved under appropriate governmental standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a	Appearance	Colorless to pale yellow clear liquid
b	Odor	Citrus
c	Odor Threshold	No data available
d	pH	No data available
e	Melting Point /Freezing Point	Melting Point -74.3°C
f	Boiling Point	175-176°C
g	Flash Point	48°C closed cup
h	Evaporation Rate	No data available
i	Flammability (Solid, Gas)	No data available
j	Upper/lower Flammability Limit	Upper explosion limit: 6.1% (V) Lower explosion limit: 0.7% (V)
k	Vapor pressure	50 hPa at 20.°C
l	Vapor density	4.70 (Air=1.0)
m	Relative density at 25°C	0.838-0.848
n	Solubility	Insoluble in water
o	Partition coefficient: n-octanol/water	No data available
p	Auto-ignition Temp.	245°C at 995 hPa
q	Decomposition Temp,	No data available
r	Viscosity	No data available
s	Explosive properties	No data available
t	Oxidizing properties	No data available

9.2 Other Safety Information No data available

Section 10: STABILITY AND REACTIVITY

10.1	**Reactivity**	No data available
10.2	**Chemical Stability**	Stable under recommended storage conditions
10.3	**Possibility of Hazardous reactions**	No data available
10.4	**Conditions to avoid**	Heat, Flames, Sparks
10.5	**Incompatible materials**	Strong oxidizing agents
10.6	**Hazardous decomposition products**	Formed under fire conditions – Carbon Oxides
10.7	**Further Information**	No data available

Section 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Toxicity

LD50-Oral –Rat	4,400 mg/kg Remarks: Behavioral: Changes in motor activity (specific assay); Respiratory disorder; Skin and Appendages; Hair
LC50-Inhalation	No data available
LD50-Dermal –Rabbit	>5,000 mg/kg
Skin corrosion/irritation	No data available
Serious eye damage/eye irritation	Rabbit: No eye irritation (OECD Test Guideline 405)
Respiratory or skin sensitization	Mouse: May cause skin sensitisation by skin contact (OECD Test Guideline 429)
Germ Cell mutagenicity	Mouse: Lymphocyte Negative Rat-Male Negative
Carcinogenicity	Rat- Oral: Tumorigenic: Carcinogenic by RTECS Criteria: Kidney, Ureter, Bladder:

Kidney Tumors, Tumorigenic Effects: Testicular tumors

Mouse-Oral: Tumorigenic: Equivocal Tumorigenic agent by RTECS criteria. Gastrointestinal Tumors.

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC; ACGIH, NTP or EPA classification.

IARC	3-Group 3: Not classifiable as to its carcinogenicity to humans (D-Limonene)
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.
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.

Reproductive toxicity	No data available
Specific target organ toxicity-single exposure (GHS)	No data available
Specific target organ toxicity-repeated exposures (GHS)	No data available
Aspiration Hazards	No data available
Signs and Symptoms of Exposure	Liver- Irregularities – Based on Human Evidence
Additional Information	Repeated dose toxicity: Mouse (male and female) No observed adverse effect levels. 1,650 mg/kg – Lowest observed adverse effect level 3,300 mg/kg
RTECS:	GW6360000

Section 12: ECOLOGICAL INFORMATION

12.1 Toxicity

To Fish:
LC-50 – Flow through test: Pimephales promelas (fathead minnow) 0.72 mg/l 96 hr
(OECD Test Guideline 203)

To Daphnia and other aquatic invertebrates
EC-50 – Immobilization Test: Daphnia magna (Water Flea) 0.36 mg/l 48 hr
(OECD Test Guideline 202)

To Bacteria
EC-50 – Sludge Treatment: 3.94 mg/l
(OECD Test Guideline 301B)

12.2	**Persistence and degradability**	No data available
12.3	**Bioaccumulative potential**	No data available
12.4	**Mobility in soil**	No data available
12.5	**Results of PBT and vPvB assessment**	PBT/vPvB assessment not available as chemical safety assessment not required / not conducted
12.6	**Other adverse effects**	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

13.1 Disposal methods

Product:	According to local regulations
Packaging	According to local regulations

Section 14: TRANSPORT INFORMATION

DOT (US)	UN-Number: 2319 Class: 3 Packing Group: III
Proper shipping name:	Flammable liquid, n.o.s. (Terpene Hydrocarbons)
Marine Pollutant:	No
Poison Inhalation Hazard:	No
IMDG	UN-Number: 1192 Class: 3 Packing Group: III EMS-No.: F-E, S-E
Proper shipping name:	**FLAMMABLE LIQUID, n.o.s. (Terpene Hydrocarbons)**
Marine Pollutant:	No
IATA	UN-Number: 1192 Class: 3 Packing Group: III
Proper shipping name:	Flammable liquid, n.o.s. (Terpene Hydrocarbons)

Section 15: REGULATORY INFORMATION

SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302		
SARA 313 Components	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.		
SARA 311/312 Hazards	Fire Hazard, Acute health hazard, Chronic Health Hazard		
Massachusetts Right to Know components	No components are subject to the Massachusetts Right to Know Act		
Pennsylvania Right to Know components	D-Limonene	CAS# 5989-27-5	Rev. Date: 12/1/1989
New Jersey Right to Know components	D-Limonene	CAS# 5989-27-5	Rev. Date: 12/1/1989
California Prop. 65 components	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.		

Section 16: OTHER INFORMATION

HMIS Rating

Health hazard	2
Chronic Health Hazard*	
Flammability	2
Physical Hazard	0

Further Information

Aurochemicals provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. Aurochemicals makes no representations or warranties, either expressed or implied, including without limitation any warranties of merchantability, fitness for a particular purpose with respect to the information set forth herein or the product to which the information refers. Accordingly, Aurochemicals will not be responsible, nor held liable, for damages resulting from use of or reliance upon this information.

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