CHEMISPHERE

Safety Data Sheet

acc. to 29 CFR 1910.1200 App D

PENAIR HD-1

Version number: 1.1 Date of compilation: 2024-08-05

SECTION 1: Identification

1.1 Product identifier

Trade name **PENAIR HD-1**

Alternative number(s) XB10470

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses Aircraft Exterior Cleaner

1.3 Details of the supplier of the safety data sheet

Chemisphere
2101 Clifton Ave
St. Louis MO 63139
United States
Telephone: 314-644-1300
Fax: 314-644-7194
Website: www.ChemisphereCorp.com

Email: jbrooks@chemispherecorp.com

1.4 Emergency telephone number

Emergency information service CHEMTREC: 800-424-9300 (24 Hour)

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Section	Hazard class	Category	Hazard class and category	Hazard statement
A.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
A.3	serious eye damage/eye irritation	2A	Eye Irrit. 2A	H319
A.4S	skin sensitization	1	Skin Sens. 1	H317
A.8D	specific target organ toxicity - single exposure (narcotic effects, drowsiness)	3	STOT SE 3	H336
A.10	aspiration hazard	1	Asp. Tox. 1	H304
B.6	flammable liquid	3	Flam. Liq. 3	H226

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

The product is combustible and can be ignited by potential ignition sources.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

- Signal word danger

- Pictograms

GHS02, GHS07, GHS08 

- Hazard statements

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.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

- Precautionary statements

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
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.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing must not be allowed out of the workplace.
P280	Wear protective gloves/eye protection/face protection.
P301+P310	If swallowed: Immediately call a poison center/doctor.
P302+P352	If on skin: Wash with plenty of water.
P303+P361+P353	If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a poison center/doctor if you feel unwell.
P321	Specific treatment (see on this label).
P331	Do NOT induce vomiting.
P362	Take off contaminated clothing and wash before reuse.
P363	Wash contaminated clothing before reuse.
P370+P378	In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to industrial combustion plant.

- Hazardous ingredients for labelling d-Limonene

2.3 Other hazards

of no significance

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture)

3.2 Mixtures

Description of the mixture

Name of substance	Identifier		Wt%
Water	CAS No	7732-18-5	25 – < 50
d-Limonene	CAS No	5989-27-5	25 – < 50
Glycol Ether DB	CAS No	112-34-5	10 – < 25
Oleic Acid	CAS No	61790-44-1	10 – < 25
Dipropylene Glycol	CAS No	25265-71-8	5 – < 10
Nonylphenol, branched, ethoxylated	CAS No	68412-54-4	5 – < 10
Potassium Hydroxide	CAS No	1310-58-3	1 – < 5
Hydrocal 100	CAS No	64742-52-5	1 – < 5
Sodium Bicarbonate	CAS No	144-55-8	1 – < 5
Triethanolamine 99%	CAS No	102-71-6	0.1 – < 1
BHT	CAS No	128-37-0	0.1 – < 1

Remarks

For full text of abbreviations: see SECTION 16

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Narcotic effects.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

In case of insufficient ventilation and/or in use, may form flammable/explosive vapor-air mixture. Solvent vapors are heavier than air and may spread along floors. Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures.

Hazardous combustion products

Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO2)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Coordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Avoidance of ignition sources. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharge. Use only in well-ventilated areas. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools.

- Specific notes/details

Places which are not ventilated, e.g. unventilated below ground level areas such as trenches, conduits and shafts, are particularly prone to the presence of flammable substances or mixtures. Vapors are heavier than air, spread along floors and form explosive mixtures with air. Vapors may form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

- Explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

- Flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

Control of the effects

Protect against external exposure, such as

frost

- Ventilation requirements

Use local and general ventilation. Ground/bond container and receiving equipment.

- Packaging compatibilities

Only packagings which are approved (e.g. acc. to the Dangerous Goods Regulations) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Notation	Source
US	triethanolamine	102-71-6	PEL (CA)		5						Cal/OSHA PEL
US	triethanolamine	102-71-6	TLV®		5						ACGIH®

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Ceiling-C [ppm]	Ceiling-C [mg/m³]	Notation	Source
											2024
US	diethylene glycol monobutyl ether	112-34-5	TLV®	10						iv	ACGIH® 2024
US	2,6-di-tert-butyl-p-cresol	128-37-0	PEL (CA)		10						Cal/OSHA PEL
US	2,6-di-tert-butyl-p-cresol	128-37-0	REL		10 (10 h)						NIOSH REL
US	butylated hydroxy-toluene	128-37-0	TLV®		2					iv	ACGIH® 2024
US	potassium hydroxide	1310-58-3	REL						2		NIOSH REL
US	potassium hydroxide	1310-58-3	TLV®						2		ACGIH® 2024
US	potassium hydroxide (caustic potash)	1310-58-3	PEL (CA)						2		Cal/OSHA PEL

Notation

Ceiling-C	ceiling value is a limit value above which exposure should not occur
iv	inhalable fraction and vapor
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified

Relevant DNELs of components

Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
d-Limonene	5989-27-5	DNEL	66.7 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
d-Limonene	5989-27-5	DNEL	9.5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Dipropylene Glycol	25265-71-8	DNEL	238 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Dipropylene Glycol	25265-71-8	DNEL	84 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Nonylphenol, branched, ethoxylated	68412-54-4	DNEL	4.7 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Nonylphenol, branched, ethoxylated	68412-54-4	DNEL	66.7 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Potassium Hydroxide	1310-58-3	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
Triethanolamine 99%	102-71-6	DNEL	1 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
Triethanolamine 99%	102-71-6	DNEL	7.5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant DNELs of components

Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Triethanolamine 99%	102-71-6	DNEL	140 µg/cm²	human, dermal	worker (industry)	chronic - local effects
BHT	128-37-0	DNEL	1.76 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
BHT	128-37-0	DNEL	0.5 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant PNECs of components

Name of substance	CAS No	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
d-Limonene	5989-27-5	PNEC	14 µg/l	aquatic organisms	freshwater	short-term (single instance)
d-Limonene	5989-27-5	PNEC	1.4 µg/l	aquatic organisms	marine water	short-term (single instance)
d-Limonene	5989-27-5	PNEC	1.8 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
d-Limonene	5989-27-5	PNEC	3.85 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
d-Limonene	5989-27-5	PNEC	0.385 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
d-Limonene	5989-27-5	PNEC	0.763 mg/kg	terrestrial organisms	soil	short-term (single instance)
Dipropylene Glycol	25265-71-8	PNEC	0.1 mg/l	aquatic organisms	freshwater	short-term (single instance)
Dipropylene Glycol	25265-71-8	PNEC	0.01 mg/l	aquatic organisms	marine water	short-term (single instance)
Dipropylene Glycol	25265-71-8	PNEC	1,000 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Dipropylene Glycol	25265-71-8	PNEC	0.238 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Dipropylene Glycol	25265-71-8	PNEC	0.024 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Dipropylene Glycol	25265-71-8	PNEC	0.025 mg/kg	terrestrial organisms	soil	short-term (single instance)
Nonylphenol, branched, ethoxylated	68412-54-4	PNEC	0.8 µg/l	aquatic organisms	freshwater	short-term (single instance)
Nonylphenol, branched, ethoxylated	68412-54-4	PNEC	0.8 µg/l	aquatic organisms	marine water	short-term (single instance)
Nonylphenol, branched, ethoxylated	68412-54-4	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Nonylphenol, branched, ethoxylated	68412-54-4	PNEC	4.6 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Nonylphenol,	68412-54-4	PNEC	0.46 mg/kg	aquatic organisms	marine sediment	short-term (single in-

Relevant PNECs of components						
Name of substance	**CAS No**	**Endpoint**	**Threshold level**	**Organism**	**Environmental compartment**	**Exposure time**
branched, ethoxylated						stance)
Triethanolamine 99%	102-71-6	PNEC	0.32 mg/l	aquatic organisms	freshwater	short-term (single instance)
Triethanolamine 99%	102-71-6	PNEC	0.032 mg/l	aquatic organisms	marine water	short-term (single instance)
Triethanolamine 99%	102-71-6	PNEC	10 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Triethanolamine 99%	102-71-6	PNEC	1.7 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Triethanolamine 99%	102-71-6	PNEC	0.17 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Triethanolamine 99%	102-71-6	PNEC	0.151 mg/kg	terrestrial organisms	soil	short-term (single instance)
BHT	128-37-0	PNEC	0.199 µg/l	aquatic organisms	freshwater	short-term (single instance)
BHT	128-37-0	PNEC	0.02 µg/l	aquatic organisms	marine water	short-term (single instance)
BHT	128-37-0	PNEC	0.017 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
BHT	128-37-0	PNEC	0.458 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
BHT	128-37-0	PNEC	0.046 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
BHT	128-37-0	PNEC	0.054 mg/kg	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection. Use safety goggle with side protection. Wear face-shield.

Skin protection

- Hand protection

Wear suitable gloves.

- Other protection measures

Wash hands thoroughly after handling. Protective clothing against liquid chemicals. Footwear protecting against chemicals.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	liquid
Color	not determined

Particle	not relevant (liquid)

Odor	characteristic

Other safety parameters

pH (value)	9
Melting point/freezing point	30 °F
Initial boiling point and boiling range	212 °F
Flash point	125 °F at 1 atm
Evaporation rate	not determined
Flammability (solid, gas)	not relevant, (fluid)

Explosive limits

- Lower explosion limit (LEL)	0.85 vol%
- Upper explosion limit (UEL)	24.6 vol%
Vapor pressure	200 Pa at 298 K
Density	not determined
Vapor density	this information is not available
Relative density	information on this property is not available
Solubility(ies)	not determined

Partition coefficient

- n-octanol/water (log KOW)	this information is not available
Auto-ignition temperature	245 °C
Viscosity	not determined
Explosive properties	none

Oxidizing properties	none

9.2 Other information

Liquid content	93.45 %
Solid content	3.7 %
Temperature class (USA, acc. to NEC 500)	T2C (maximum permissible surface temperature on the equipment: 230°C)

SECTION 10: Stability and reactivity

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials". The mixture contains reactive substance(s). Risk of ignition.

If heated:

Risk of ignition

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

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

Hints to prevent fire or explosion

Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge.

10.5 Incompatible materials

Oxidizers

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic.
GHS of the United Nations, annex 4: May be harmful if swallowed.

Acute toxicity estimate (ATE) of components			
Name of substance	**CAS No**	**Exposure route**	**ATE**
Dipropylene Glycol	25265-71-8	inhalation: vapor	11 $^{mg}/_{l}$/4h
Dipropylene Glycol	25265-71-8	inhalation: dust/mist	>2.34 $^{mg}/_{l}$/4h
Potassium Hydroxide	1310-58-3	oral	333 $^{mg}/_{kg}$
Hydrocal 100	64742-52-5	inhalation: vapor	11 $^{mg}/_{l}$/4h
Hydrocal 100	64742-52-5	inhalation: dust/mist	2.18 $^{mg}/_{l}$/4h

Skin corrosion/irritation
Causes skin irritation.

Serious eye damage/eye irritation
Causes serious eye irritation.

Respiratory or skin sensitization
May cause an allergic skin reaction.

Germ cell mutagenicity
Shall not be classified as germ cell mutagenic.

Carcinogenicity
Shall not be classified as carcinogenic.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans			
Name of substance	**CAS No**	**Classification**	**Number**
Triethanolamine 99%	102-71-6	3	
BHT	128-37-0	3	
d-Limonene	5989-27-5	3	

Legend

3 Not classifiable as to carcinogenicity in humans

Reproductive toxicity
Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure
May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure
Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard
May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1 Toxicity
Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute) of components

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
d-Limonene	5989-27-5	LC50	720 µg/l	fish	96 h
d-Limonene	5989-27-5	EC50	688 µg/l	fish	96 h
d-Limonene	5989-27-5	ErC50	0.32 mg/l	algae	72 h
Dipropylene Glycol	25265-71-8	LC50	46,500 mg/l	fish	96 h
Dipropylene Glycol	25265-71-8	EC50	>100 mg/l	aquatic invertebrates	48 h
Dipropylene Glycol	25265-71-8	ErC50	>100 mg/l	algae	72 h
Nonylphenol, branched, ethoxylated	68412-54-4	LC50	0.218 mg/l	fish	96 h
Nonylphenol, branched, ethoxylated	68412-54-4	ErC50	>3 mg/l	algae	72 h
Sodium Bicarbonate	144-55-8	LC50	7,100 mg/l	fish	96 h
Sodium Bicarbonate	144-55-8	EC50	4,100 mg/l	aquatic invertebrates	48 h
Hydrocal 100	64742-52-5	LL50	>100 mg/l	fish	96 h
Hydrocal 100	64742-52-5	EL50	>10,000 mg/l	aquatic invertebrates	24 h
Triethanolamine 99%	102-71-6	LC50	11,800 mg/l	fish	96 h
Triethanolamine 99%	102-71-6	EC50	609.9 mg/l	aquatic invertebrates	48 h
Triethanolamine 99%	102-71-6	ErC50	512 mg/l	algae	72 h
BHT	128-37-0	EC50	0.61 mg/l	aquatic invertebrates	48 h
BHT	128-37-0	ErC50	>0.4 mg/l	algae	72 h

Aquatic toxicity (chronic) of components

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
d-Limonene	5989-27-5	EC50	<0.67 mg/l	fish	8 d
d-Limonene	5989-27-5	LC50	0.41 mg/l	fish	8 d
Sodium Bicarbonate	144-55-8	LC50	675 mg/l	fish	37 d
BHT	128-37-0	EC50	0.096 mg/l	aquatic invertebrates	21 d

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.7 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packages

Only packagings which are approved (e.g. acc. to DOT) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: Transport information

14.1 UN number

DOT	UN 1993

14.2 UN proper shipping name

DOT	Flammable liquid, n.o.s. (d-Limonene)
Technical name (hazardous ingredients)	d-Limonene, Potassium Hydroxide

14.3 Transport hazard class(es)

DOT	3

14.4 Packing group

DOT	III

14.5 Environmental hazards

14.6 Special precautions for user

Do not handle until all safety precautions have been read and understood. .

14.7 Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) - Additional information

Particulars in the shipper's declaration	UN1993, Flammable liquid, n.o.s., (contains: d-Limonene, Potassium Hydroxide), 3, III, environmentally hazardous
Reportable quantity (RQ)	47,619 lbs (21,619 kg) (Potassium Hydroxide)
Danger label(s)	3, fish and tree

Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	B1, B52, IB3, T4, TP1, TP29

ERG No	128

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	yes (hazardous to the aquatic environment) (d-Limonene)
Danger label(s)	3, fish and tree

Special provisions (SP)	223, 274, 955
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-E
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Environmental hazards	yes (hazardous to the aquatic environment)
Danger label(s)	3

Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Superfund Amendment and Reauthorization Act (SARA TITLE III)

- The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

none of the ingredients are listed

- Specific Toxic Chemical Listings (EPCRA Section 313)

none of the ingredients are listed

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

- List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

Name of substance	CAS No	Remarks	Statutory code	Final RQ pounds (Kg)
Potassium Hydroxide	1310-58-3		1	1000 (454)

Legend

1 "1" indicates that the statutory source is section 311(b)(2) of the Clean Water Act

Clean Air Act

none of the ingredients are listed

Right to Know Hazardous Substance List

- Cleaning Product Right to Know Act Substance List (CA-RTK)

Name of substance	CAS No	Functionality	Authoritative Lists
d-Limonene	5989-27-5		EU Fragrance Allergens

- Toxic or Hazardous Substance List (MA-TURA)

none of the ingredients are listed

- Hazardous Substances List (MN-ERTK)

none of the ingredients are listed

- Hazardous Substance List (NJ-RTK)

Name of substance	CAS No	Remarks	Classifications
Triethanolamine 99%	102-71-6		
BHT	128-37-0		
d-Limonene	138-86-3		F2
Potassium Hydroxide	1310-58-3		CO R1
Glycol Ether DB			

Legend

CO	Corrosive
F2	Flammable - Second Degree
R1	Reactive - First Degree

- Hazardous Substance List (Chapter 323) (PA-RTK)

none of the ingredients are listed

- Hazardous Substance List (RI-RTK)

none of the ingredients are listed

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

none of the ingredients are listed

Drug precursors, Chemicals designated within the Controlled Substances Act, 21 U.S.C. § 802, paragraphs 34 (list I) and 35 (list II)

none of the ingredients are listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System. American Coatings Association.

Category	Rating	Description
Chronic	/	none

Category	Rating	Description
Health	2	temporary or minor injury may occur
Flammability	2	material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	2	material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur
Health	2	material that, under emergency conditions, can cause temporary incapacitation or residual injury
Instability	0	material that is normally stable, even under fire conditions
Special hazard		

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: Other information, including date of preparation or last revision

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
49 CFR US DOT	49 CFR U.S. Department of Transportation
ACGIH® 2024	From ACGIH®, 2024 TLVs® and BEIs® Book. Copyright 2024. Reprinted with permission. Information on the proper use of the TLVs® and BEIs®: http://www.acgih.org/tlv-bei-guidelines/policies-procedures-presentations/tlv-bei-position-statement
ATE	Acute Toxicity Estimate
Cal/OSHA PEL	California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
Ceiling-C	Ceiling value
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
DOT	Department of Transportation (USA)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EL50	Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms

Abbr.	Descriptions of used abbreviations
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
ERG No	Emergency Response Guidebook - Number
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LL50	Lethal Loading 50 %: the LL50 corresponds to the loading rate causing 50 % lethality
NIOSH REL	National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs)
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
STEL	Short-term exposure limit
TLV®	Threshold Limit Values
TWA	Time-weighted average

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.
Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
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.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

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