

SAFETY DATA SHEET

In accordance with Regulation (EC) no. 1907/2006



SUNPINE

Turpentine oil from pulping processes (TOPP)

Version: 6.0/Eng

Revision date: 11 March 2020

Supersedes: 02 October 2019

1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Name of substance: **Turpentine oil from pulping processes (TOPP)**
CAS no.: 8006-64-2
EC no: 232-350-7
Index no.: 650-002-00-6
REACH registration number: 01-2119502456-45

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

Identified uses:

Production of TOPP (and on-site uses) with no releases to water

Fractionation of TOPP

Formulation/mixing of fuel

Use as fuel

Uses advised against:

Not approved for use as a plant protection product.

1.3 Details of the supplier of the safety data sheet

Name: SunPine AB
Address: Box 76
941 22 Piteå
Sweden
Telephone number: +46 (0)911-23 28 00
E-mail of publisher responsible for the SDS: sds@sunpine.se

1.4 Emergency telephone number

Emergency telephone number in Sweden: 112, ask for poison information
On duty off hours: Yes

2 HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Classified in accordance with Regulation (EC) no. 1272/2008:

Flammable liquid, Category 2; H225
Acute toxicity, Category 4; H302, H312; H332

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Skin irritation, Category 2; H315
Eye irritation, Category 2; H319
Skin sensitiser, Category 1; H317
Aspiration toxicity, Category 1; H304
Aquatic toxicity, Category 1; H410

See section 16 for full description of hazard classes and hazard statements.

2.2 Label elements

Labelling in accordance with Regulation (EC) no. 1272/2008

Hazard pictogram:



Signal word: Hazard

Hazard statements:

H225: Very flammable liquid and vapour
H302: Harmful if swallowed
H304: May be fatal if swallowed and enters airways
H312: Harmful in contact with skin
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H332: Harmful if inhaled
H410: Very toxic to aquatic life with long lasting effects

Precautionary statements:

P210: Keep away from heat/sparks/open flames/hot surfaces. Smoking is prohibited.
P261: Avoid inhaling dust/fumes/gases/mist/vapour/spray.
P273: Avoid emission to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P403 + P235: Store in a well-ventilated area. Store in a cool place.
P501: Dispose of contents/container at an approved waste disposal site in accordance with local/regional/national/international regulations.

Contains: Turpentine oil from pulping processes

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2.3 Other hazards

The substance can contain small amounts of extremely flammable and very toxic hydrogen sulphide (H₂S). The gas can accumulate over time in the headspace of storage containers or tanks or similar enclosed equipment.

TOPP is a volatile organic compound (VOC). Vapours can be explosive in mixture with air.

Strong odour of sulfuric constituents.

The product does not fulfil the PBT and vPvB criteria in accordance with Annex XIII to REACH.

3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Classification of components in accordance with the CLP Regulation (1272/2008/EC):

Hazardous substance	Conc. (w/w %)	CAS no./ EC no./ Index no.	Hazard class and category codes	Hazard statements
Turpentine*	100	8006-64-2/ 232-350-7/ 650-002-00-6	Flam. Liq. 2 Acute Tox. 4 Acute Tox. 4 Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2 Skin Sens. 1 Asp. Tox. 1, Aquatic Chronic 1	H225 H302 H312 H332 H315 H319 H317 H304 H410

* Note: The product is defined as a UVCB substance¹ and is composed primarily of bicyclic terpenes (C₁₀H₁₆) with a small amount of other turpentines and sulphur compounds. See section 16 for the constituents blocked according to similar properties. DMDS content is < 1 %. Sulfur content varies between 0.1-0.4 %.

See section 16 for full wording of hazard phrases.

4 FIRST AID MEASURES

4.1 Description of first aid measures

If inhalation occurs: Move exposed person to fresh air and keep person at rest to facilitate breathing. Seek medical attention in case of persisting adverse health effects.

If skin contact occurs: Remove contaminated clothing and shoes and dispose of them safely. Wash contaminated skin with plenty of water and soap. Seek medical attention if irritation or symptoms persist.

If eye contact occurs: Gently flush eyes with tempered water for 15 minutes. Lift the upper and lower eyelids. Check for and remove any contact lenses if this is not difficult. Continue to rinse. Get specialist medical attention if there are any persisting symptoms.

¹ Substances with unknown or varying compositions, complex reaction products or biological material.

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If ingestion occurs: Do NOT induce vomiting. Wash out mouth carefully with plenty of water. Seek medical attention immediately if vomiting or serious coughing occurs, or if more than an insignificant amount has been swallowed. Show this safety data sheet or label on container.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation: If heated, the resulting fumes and vapours can easily irritate the upper respiratory tracts and the lungs, causing coughing and discomfort to the throat, increased respiratory rate and convulsions.

Skin contact: Causes skin irritation. May cause allergic skin reaction.

Contact with eyes: Causes serious eye irritation.

Ingestion: May be fatal if swallowed and it enters the airways. Ingestion can cause nausea and vomiting. May cause irritation in the airways and damage to the central nervous system (CNS).

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically. Seek medical attention if unsure or in case of persisting adverse health effects. Never give anything by mouth to an unconscious person.

5 FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable media:

Powder, foam, and CO₂.

Unsuitable media:

Do not use powerful water jet as this can cause the fire to spread.

5.2 Special hazards arising from the substance or mixture

The product is extremely flammable. In the outbreak of fire, irritating, toxic and offensive gases, for instance carbon oxides and sulphur oxides are produced.

5.3 Advice for fire-fighters

Wear full-body protective clothing and self-contained breathing apparatus when fighting fires.

Other

Eliminate all fire/ignition sources. Containers in the vicinity of fires should be moved immediately or cooled with water. Ensure the water does not come into contact with the seat of the fire.

6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency measures

Ensure adequate ventilation. Eliminate all fire/ignition sources. Do not get on skin or in the eyes. Use protective gloves and other necessary protective equipment.

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6.2 Environmental precautions

Prevent emissions from coming into contact with waterways, sewage and soil. Contact the emergency services in the case of larger spills. Local authorities must be informed if significant spills cannot be contained.

6.3 Methods and materials for containment and cleaning up

Absorb spills with a suitable inert absorbent (e.g. sand, active clay, multisorb). Collect in suitable labelled waste containers. Clean the spill area with large amounts of water and cleaning agent.

6.4 Reference to other sections

See section 8 for information on personal protection equipment and section 13 for disposal information.

7

HANDLING AND STORAGE

7.1 Precautions for safe handling

Keep away from sources of heat, sparks, open flames or hot surfaces. Take precautionary measures against electrostatic discharges. Use explosion proof equipment. Control of cutting, welding and other "hot work". Keep away from sources of ignition - No smoking. Ensure adequate ventilation. Provide adequate drainage and collection facilities to isolate any spilled liquids.

Avoid contact with eyes and skin. Do not breathe vapours, mist, fumes. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Remove and wash contaminated clothing before reuse. Ensure that there are eye wash and emergency shower facilities in close proximity to the workplace.

TOPP can contain small amounts of hydrogen sulphide (H₂S). The gas can accumulate over time in the headspace of TOPP storage tanks and truck tanks. Its presence can pose a significant hazard to humans and the risk has to be recognised and managed. Appropriate risk management measures include mechanical exhaust ventilation to remove flammable vapours, the setting of standard protocols for proper venting of the tank before entrance, use of workspace and personal gas detectors/alarms, documented safe working procedure/restricted working areas, clearly placed placards and use of appropriate respiratory protective equipment. Purging and inerting of equipment and containers with for example dry nitrogen.

7.2 Conditions for safe handling, including any incompatibilities

Store in tightly closed containers in a dry, cool and well-ventilated area. Store in containers that are correctly labelled. Avoid temperatures above 30°C due to risk for ignition and explosion of vapours. Store in separate container away from heat and ignition sources. Take precautionary measures against electrostatic discharges.

7.3 Specific end use(s)

See exposure scenarios attached to this Safety Data Sheet.

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8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure limits:

Derived no effect level (DNEL) – Worker:

Exposure pattern	Route	Descriptors	DNEL	Most sensitive endpoint
Acute - systemic effects - Sulphur constituents	Dermal	DNEL	1.6 mg/kg/day	Repeat-dose toxicity
	Inhalation	DNEL	51.6 mg/m ³	Repeat-dose toxicity
Acute - systemic effects - Pinene constituents	Dermal	DNEL	9.51 mg/kg/day	Repeat-dose toxicity
	Inhalation	DNEL	67.2 mg/m ³	Repeat-dose toxicity
Acute - local effects - Sulphur constituents	Dermal	Medium hazard	-	Sensitisation
	Inhalation	DNEL	10.3 mg/m ³	Repeat-dose toxicity
Acute - local effects - Pinene constituents	Dermal	DNEL	9.51 mg/cm ²	Sensitisation
	Inhalation	DNEL	133.6 mg/m ³	Repeat-dose toxicity
Long-term - systemic effects - Sulphur constituents	Dermal	DNEL	1.6 mg/kg/day	Repeat-dose toxicity (by inhalation)
	Inhalation	DNEL	0.78 mg/m ³	Repeat-dose toxicity
Long-term - systemic effects - Pinene constituents	Dermal	DNEL	3.17 mg/kg/day	Repeat-dose toxicity (by inhalation)
	Inhalation	DNEL	22.4 mg/m ³	Repeat-dose toxicity
Long-term – local effects - Sulphur constituents	Dermal	Medium hazard	-	Repeated-dose toxicity
	Inhalation	DNEL	3.9 mg/m ³	Repeated-dose toxicity
Long-term – local effects - Pinene constituents	Dermal	DNEL	3.17 mg/cm ²	Repeated-dose toxicity
	Inhalation	DNEL	44.6 mg/m ³	Repeated-dose toxicity
Local effects - Sulphur constituents	Eyes	Low hazard	-	-
Local effects - Pinene constituents	Eyes	Medium hazard	-	-

Aquatic PNECs:

As TOPP is a UVCB substance derivation of a single, representative PNEC value for this substance using conventional methods is not possible. PNECs for the aquatic compartment should therefore be based on data for the blocks of constituents rather than on data for the whole substance.

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Block	PNEC freshwater [mg/L]	PNEC sediment (fresh water) [mg/kg dw]	PNEC marine water [mg/L]	PNEC sediment (marine water) [mg/kg dw]
1	0.013 (AF 10)	1.4	0.0013 (AF 100)	0.14
2	0.0066 (AF 10)	0.68	0.00066 (AF 100)	0.068
3	0.0044 (AF 10)	0.5	0.00044 (AF 100)	0.05
4	2 (AF 10)	11.6	0.2 (AF 100)	1.2
5	1.8 (AF 10)	7.3	0.18 (AF 100)	0.73
6	0.00037 (AF 10)	8.9	0.000037 (AF 100)	0.89
7	0.08 (AF 10)	1.3	0.008 (AF 100)	0.13
8	0.011 (AF 10)	1.1	0.0011 (AF 100)	0.11
9	0.0059 (AF 1000)	0.045	0.00059 (AF 1000)	0.0045

Block	WWTP	Soil [mg/kg dw]	Air	Secondary poisoning
1	No data (toxicity unlikely)	0.27	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
2	No data (toxicity unlikely)	0.14	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
3	No data (toxicity unlikely)	0.099	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
4	No data (toxicity unlikely)	1	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
5	No data (toxicity unlikely)	0.43	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
6	No data (toxicity unlikely)	1.8	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
7	No data (toxicity unlikely)	0.22	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
8	No data (toxicity unlikely)	0.22	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
9	No data (toxicity unlikely)	0.0055	No hazard identified	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain

There is no EC occupational exposure limit value established for TOPP.

Hygienic limit value, Sweden

Substance	Level limit value		Short-time value		Note Source	Year
	mg/m ³	ppm	mg/m ³	ppm		
Turpentine (8006-64-2)	150	25	300	50	H, S, V AFS 2018:1	1990

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8.2 Exposure controls

See the attached exposure scenario for more detailed information about exposure limits, appropriate protective equipment and environmental exposure controls.

Technical measures:

Keep exposure at all times to a minimum through adequate ventilation (with 1 to 3 air changes per hour). Appropriate risk management measures also include the setting of standard protocols for proper venting of tanks before entrance, use of workspace and personal gas detectors/alarms, documented safe working procedure/restricted working areas, clearly placed placards and use of appropriate respiratory protective equipment. Do not get on skin or in the eyes. Do not breathe vapours. See the attached exposure scenario for detailed requirements in terms of process ventilation with local extraction.

Eye/face protection:

Use safety eyewear complying with an approved standard if the risk assessment indicates this is necessary to avoid exposure to liquid splashes or vapours. Install an eye washing station in the workplace.

Dermal protection/Protective gloves:

Use protective clothing and protective gloves if there is a risk of direct contact or splashes. Use chemical-resistant protective gloves that comply with EN 374. It is recommended to use a glove material made of nitrile rubber (thickness 0.15/0.38 mm) that has a minimum breakthrough time of 15 minutes/4 hours. Warranties regarding breakthrough times of the glove material may vary between glove manufactures, therefore always follow provided recommendations from your supplier. It is important that skin does not come into contact with the product and special attention shall be paid during putting on and taking off the gloves.

Respiratory protection:

See the attached exposure scenario for detailed requirements in terms of areas of use.

If there is a risk of inhaling vapours, fumes and mist (e.g. when cleaning, working in enclosed spaces and tanks), respiratory protection, APF of 10, with at least 90% efficiency must be used (compliant with EN 14387 requirements). Type A (Brown) gas filter (organic gases with boiling point above 65°C). Closely follow the recommendations from the filter manufacturer regarding time and exposure concentration limits in order to have the filters working properly.

Environmental exposure controls:

Collect spillage. Prevent dispersal of spilled materials to waterways, drains and sewers and pollution of soil and vegetation. Procedural and technological control using Best Available Technique (BAT) shall apply.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance:

Physical state:

Fluid

Colour:

Uncoloured, amber colour, yellow

Odour:

Sulphur compounds

Odour threshold:

Not determined

pH:

Not determined

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Melting point/freezing point:	-60 to -50°C	Publicly obtained data source
Initial boiling point and boiling range:	154 to 170°C	Peer reviewed public domain source
Flash point:	> 23°C	IP 170
Evaporation rate:	Not applicable	
Flammability:	Flammable	
Lower and upper explosive (flammable) limits:	Ca 0.8-6 vol-%; 45-340 g/m ³ of air (at 101.3 kPa)	*
Vapour pressure:	2600 Pa (25°C)	Obtained by prediction
Vapour density:	Not determined	
Relative density:	864 kg/m ³ (20°C)	ASTM D4052
Solubility:	0.351 g/l (20°C, pH 6.4-6.5) (in water)	OECD TG 105
Partition coefficient: n-octanol/water:	Not applicable to UVCB substances	
Auto-ignition temperature:	270°C (19-20°C, 1013 hPa)	EU method A.15
Decomposition temperature:	Not determined	
Viscosity:	2.03548 cP (50°C)	Not specified
Explosive properties:	**	
Oxidising properties:	Not oxidising***	

9.2 Other information

Surface tension: 54.8 mN/m (20°C) (OECD TG 115).

TOPP is a volatile organic compound (VOC) since the boiling point is below 250°C.

* Ullman's Encyklopedia of Industrial Chemistry, 5th edition 1996, volume A27. Might vary due to local conditions.

** Even in warm air the vapours can be explosive. Low points are of extra concern as volatile vapours are 4.7 times heavier than air.

*** Based upon chemical structure of the constituents of TOPP, and experience in use and handling, the substance is considered non-oxidising.

10 STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions regards use and storage.

10.2 Chemical stability

Stable under normal conditions regards use and storage.

10.3 Possibility of hazardous reactions

The product can self-oxidise on contact with air and then generate heat which can lead to spontaneous combustions in enclosed spaces. Materials such as rags, containers and insulation immersed with the product may self-ignite in enclosed spaces.

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10.4 Conditions to avoid

Avoid overheating, heat and ignition sources.

10.5 Incompatible materials

May react violently with:

- oxidising products, strong mineral acids, halogens (especially chlorine)
- $\text{Ca}(\text{OCl})_2$, CrO_3 , $\text{Cr}(\text{OCl})_3$, SnCl_4
- hexachloromelamine and trichloromelamine

10.6 Hazardous decomposition products

Contact with air can result in the formation of allergenic oxidising products. Contact with acid can result in the formation of sulphur compounds.

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a) Acute toxicity

TOPP is classified for acute toxicity (oral, dermal and inhalation), Category 4.

LD50 Oral: 4.6 ml/kg (rat) (OECD 401) – equivalent to ca. 4000 mg/kg bw

LD50 Dermal: >2,000 mg/kg bw (rabbit) (OECD 402)

LD50 Inhalation: 13.7 mg/L (rat) (OECD 403)

Clinical signs were slight ataxia and lethargy in the oral study. Local irritant effects were noted in the dermal study. Clinical signs reported from the inhalation study were convulsions and apnea; increase in respiratory rate and decrease in tidal volume.

b) Skin corrosion/irritation

TOPP is irritating to skin.

Reliable skin irritation tests in vitro (EpiSkin) are available for three of the main components in TOPP (α -pinene, β -pinene och δ -3-carene). The findings in all three tests showed that the test substances must be classified as skin irritants based on cell survival percentage (< 50%). The studies were conducted in line with an appropriate test protocol (ECVAM).

c) Serious eye damage/irritation

TOPP is classified as an eye irritant (causes serious eye irritation).

Two major constituents of TOPP (α -pinene and δ -3-carene) did not meet CLP criteria for classification as eye irritants (OECD TG 405). Turpentine (unspecified composition) was reported to cause adverse ocular effects in a peer-reviewed publication.

d) Respiratory - skin sensitisation

TOPP is classified as a skin sensitiser according to a method similar to the OECD 406 Test Guideline.

No data available regarding respiratory sensitisation.

e) Germ cell mutagenicity

TOPP is not considered to be mutagenic according to the OECD 473 Test Guideline.

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f) Carcinogenicity

TOPP is not considered to cause cancer. Further testing is not considered necessary because the substance is not classified for mutagenicity and there is no evidence from the repeated dose studies that constituents of TOPP are able to induce hyperplasia or pre-neoplastic lesions.

g) Reproductive toxicity

TOPP is not classified for reproductive toxicity.

No fertility or developmental toxicity data are available for the whole substance as such. However, data on constituents are available and is thus representative of five of the nine blocks, i.e. approximately 82% of the whole substance. None of the repeated dose toxicity study results meet the criteria for fertility or developmental toxicity.

NOAEL(fertility) 260 mg/kg bw/day and NOAEL(developmental toxicity) \geq 1000 mg/kg bw/day were used for CSA based on the following studies among other.

NOAEL(fertility), oil of nutmeg, rat: \geq 260 mg/kg bw/day

NOAEL(fertility), oil of nutmeg, mouse: \geq 560 mg/kg bw/day

NOAEL(fertility), oil of nutmeg, hamster: \geq 260 mg/kg bw/day

NOAEL(fertility), terpinolene, rat, OECD 422: 250 mg/kg bw/day

NOAEL(developmental toxicity), camphene, rat, OECD 414: \geq 1000 mg/kg bw/day

NOAEL(developmental toxicity), oil of nutmeg, rat: \geq 260 mg/kg bw/day

NOAEL(developmental toxicity), oil of nutmeg, mouse: \geq 560 mg/kg bw/day

NOAEL(developmental toxicity), oil of nutmeg, hamster: \geq 600 mg/kg bw/day

NOAEL(developmental toxicity), terpinolene, rat, OECD 422: 371 mg/kg bw/day

NOAEL(developmental toxicity), terpinolene, rat, OECD 422: $>$ 250 mg/kg bw/day

No teratogenic effects were reported in a 2-generation reproductive toxicity study with DMDS (OECD 416).

h) Specific target organ toxicity (single exposure)

TOPP does not fulfil the criteria to be classified as STOT SE.

i) Specific target organ toxicity (repeated exposure)

TOPP does not fulfil the criteria to be classified as STOT RE.

Available toxicity data indicate that the toxicological profile for TOPP is similar to that of α -pinene.

In a sub-chronic inhalation toxicity study, equivalent to OECD 413, in rats (and mice) nephropathy is reported which is relevant only in male rats (alpha-2u-globulin nephropathy is a known male rat-specific effect).

LOAEC: 25 ppm (male rat). In humans, this LOAEC will not be relevant.

NOAEC: 200 ppm (female rats) (mortality and a lower body weight gain).

Overall NOAEC relevant for humans: 200 ppm.

In a 90-day inhalation study (in accordance with OECD 413) for the constituent dimethyl disulfide, the NOAEC was 10 ppm (38.5 mg/m³) based on adverse local effects on the respiratory tract. In a second similar study the NOAEC was 5 ppm, 6h/d, for male rats and 25 ppm, 6h/d, for female rats.

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j) Aspiration hazard

TOPP is classified as presenting an aspiration hazard and may be fatal if swallowed and it enters the airways.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

TOPP is classified as very toxic to aquatic life with long-lasting effects.

LL50 and EL50 are very similar to LC50 and EC50 but test the water phases using incomplete mixtures. Reliable short-term data has been defined through WAF (Water-Accommodated Fraction) tests.

TOPP with sulphur content of 3.6%:

Acute toxicity for fish:

LL50, 96h, *Danio rerio* (OECD 203): 45.1 mg/L

NOELR, *Danio rerio*: 5 mg/L

Acute toxicity for algae:

EL50, 72 h, *Desmodesmus subspicatus* (OECD 201): 22.5 mg/L

NOELR, *Desmodesmus subspicatus*: 5 mg/L

Acute toxicity for shellfish:

EL50, 48 h, *Daphnia magna* (water flea) (OECD 202): 8.8 mg/L

NOELR, *Daphnia magna*: 2.5 mg/L

No measured data are available for long-term toxicity of TOPP to fish or aquatic invertebrates.

12.2 Persistence and degradability

Biodegradation:

TOPP is readily biodegradable. A biodegradability of 72% (measured as a percentage of theoretical oxygen demand, TOD) was reached after 28 days in a study in accordance with OECD 301 F (manometric respirometry). However, the '10-day window' criterion was not met.

Abiotic degradation:

On the basis of structural examination, none of the constituents of TOPP contain functional groups that are susceptible to hydrolysis under conditions relevant to the environment. This fate process will not contribute to a measurable degradative loss of these substances from the environment. The substance constituents can therefore be considered as stable under hydrolytic conditions.

12.3 Bioaccumulative potential

TOPP is not expected to bioaccumulate.

12.4 Mobility in soil

The adsorption/desorption of TOPP as a whole substance is not scientifically necessary or meaningful for the purpose of environmental assessment. Calculated values for the constituents of TOPP were obtained using KOCWIN. The calculated organic-carbon-water partition coefficients, KOC, were 1000, 1000, 1100, 22, 4.8, 240 000, 130, 1000, 40 for the nine blocks, respectively. Many of the constituents

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of TOPP will, due to their properties, partition into organic matter present in suspended and bottom sediments and soil.

12.5 Results of PBT and vPvB assessment

Based on available data, the product is not considered to contain the PBT substances or vPvB substances according to REACH (regulation (EC) no. 1907/2006) annex XIII.

12.6 Other adverse effects

No known other effects.

13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

See the attached exposure scenario for more detailed information about waste treatment options.

Product residues, spills, etc. are hazardous waste. Disposal, transport, storage and handling of the waste takes place in accordance with the Swedish Waste Ordinance (2011:927). Avoid contamination of soil or waterways with waste, and do not dispose of waste outdoors.

Suitable waste codes:

13 07 03* - Other fuels (as well as mixtures)

14 TRANSPORT INFORMATION

14.1 UN number: 1993

14.2 UN proper shipping name: FLAMMABLE LIQUID, N.O.S. (Turpentine oil from pulping processes)

14.3 Transport hazard class(es):

Label: 3

ADR/RID Class: 3

ADR/RID Class Code: F1

ADR/RID dangerous goods code: 30

14.4 Packing group: III

14.5 Environmental hazards: Yes

14.6 Special precautions for user: IMDG EmS: F-E, S-E

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code:

In case of bulk transport at sea:

Product name: *Turpentine*

Pollutant type: X

Ship type: 2

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15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations:

European parliament and council's regulation (EC) no. 1907/2006 (REACH).

European parliament and council regulation (EC) no. 1272/2008 about classification, labelling and packing of substances and mixtures (CLP).

Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC (Seveso III).

Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work.

Council Directive 2008/98/EC on waste.

National regulations:

AFS 2018:1 Occupational exposure limits.

AFS 2011:19 Chemical Hazards in the Working Environment.

MSBFS 2018:5 Regulations on the transport of dangerous goods on road and in terrain (ADR-S).

MSBFS 2018:3 Regulations on cisterns and pipelines for flammable liquids.

SRVFS 2004:7 Regulations on explosive environment when handling flammable gases and liquids.

SÄIFS 2000:2 Regulations and general advice on handling flammable liquids.

Waste ordinance (2011:927).

There are special requirements for allergy-causing chemical products, AFS 2011:19, 37 a-g §§.

15.2 Chemical safety assessment

A chemical safety assessment has been conducted for this substance. Relevant exposure scenarios are attached as an annex to this safety data sheet.

16 OTHER INFORMATION

Abbreviations

AFS: The Swedish Work Environment Authority's provisions.

MSBFS: The Swedish Civil Contingencies Agency's provisions.

SRVFS: The State Rescue Service's provisions.

SÄIFS: The Inspectorate of Explosives's provisions.

PBT: Persistent, Bioaccumulative and Toxic substances. PBT substances comply with the criteria in part 1, annex XIII in Reach.

vPvB: Very persistent and bioaccumulative substances. A vPvB substance complies with the criteria in

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part 2, annex XIII in REACH.

UVCB: Substances with unknown or varying compositions, complex reaction products or biological material.

H: The substance can easily be absorbed through the skin.

S: The substance is sensitising.

V: Indicative short-term limit value.

dw: dry weight

DNEL: Derived No Effect Level (Derived level not based on observed effects).

PNEC: predicted no effect concentration.

EC50: The concentration of a substance that affects 50 % of a population over a given period of time.

EL50: Effect loading, the loading rate of a test substance resulting in 50 % immobilization of the exposed test species.

LC50: Deadly concentration for 50 % of a test population.

LD50: Leathal dose for 50 % of the test population (leathal median dose).

LL50: Lethal load of test substance resulting in 50 % mortality.

LOAEL: Lowest observed adverse effect level.

NOELR: No observed effect loading rate.

NOEL: No observable effect level.

NOAEL: No observed adverse effect level.

NOAEC: Concentration where no harmful effect is observed.

DMDS: Dimethyl Disulfide

Meaning of phrases

Acute Tox. 4: Acute toxicity, category 4

Asp. Tox. 1: Aspiration hazard, category 1

Skin Sens. 1: Skin sensitisation, Category 1

Flam. Liq. 2: Flammable liquids, category 2

Skin Irrit. 2: Skin irritation, category 2

Aquatic Chronic 1: Aquatic toxicity, category chronic 1

Eye Irrit. 2: Eye irritation, category 2

H225: Very flammable liquid and vapour

H302: Harmful if swallowed.

H304: May be fatal if swallowed and it enters the airways.

H312: Harmful in contact with skin.

H315: Causes skin irritation.

H317: May cause an allergic skin reaction.

H319: Causes serious eye irritation.

H332: Harmful if inhaled.

H410: Very toxic to aquatic life with long lasting effects.

Important literature references

Information from REACH registration of the substance.

Classification and labelling register.

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Manufacturer's notes

This safety data sheet has been compiled by SunPine AB in Piteå based on the details available to the company at the date of publication. The information should be seen as a guideline by purchasers of goods from SunPine AB and is meant to be used for health, safety and environmental purposes. The information cannot be seen as a specification or as a guarantee for any particular property in the product.

Constituents of TOPP:

Block number	Constituents
1	Pinene
2	δ-3-carene
3	Dipentene
4	Dimethyl sulfide
5	Methyl mercaptan
6	Sesquiterpenes
7	Terpene alcohols
8	Camphene
9	Dimethyl disulfide

Document history

Version	Date	Comment
6	11 March 2020	Revisions are made to the following sections: 1-4, 7-9, 11-16

Annexes

The following relevant exposure scenarios (ES), drawn up as a part in the registration dossier for Turpentine in accordance with the REACH regulation (ECG), are attached:

ES 1: Manufacture – production of turpentine oil

ES 2: Uses at industrial sites - Fractionation

ES 3: Formulation and re-packing – Fuel in energy generation

ES 4: Uses at industrial sites – Fuel in energy generation