

SAFETY DATA SHEET

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



SUNPINE

Crude tall oil (CTO)

Version: 7.0/Eng

Revision date: 10/02/2020

Supersedes: 22/09/2017

1 NAME OF SUBSTANCE/MIXTURE AND FIRM/COMPANY

1.1 Product designation

Trade name: **Crude tall oil (CTO)**
Name of substance: Crude tall oil
CAS no.: -
EC no: 931-433-1
REACH registration number: 01-2119494863-23

1.2 Relevant identified uses of the substance or mixture and non-recommended uses

Identified uses: *On-site manufacture and use of CTO without emission into waterways*
Use as fuel in energy production
Fractionation

1.3 Further details about safety data sheet provider

Name: SunPine AB
Address: Box 76
941 22 Piteå
Sweden
Telephone number: 0911-23 28 00
E-mail address of publisher responsible for safety data sheet: sds@sunpine.se

1.4 Telephone number in emergency situations

Emergency telephone number in Sweden: 112
Telephone number of the Poisons Information Centre: 010-456 67 00
On duty off hours: Yes

2 HAZARDOUS PROPERTIES

2.1 Classification of substance or mixture

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

Skin sensitiser, Category 1: H317

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

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2.2 Labelling details

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

Hazard pictogram:



Signal word: Warning

Hazard statements:

H317: May cause an allergic skin reaction.

Precautionary statements:

P261: Avoid breathing fumes/mist/vapours/spray.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P302 + P352: IF ON SKIN: Wash with plenty of water/soap.

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

P363: Wash contaminated clothing before reuse.

P501: Dispose of contents/container to approved disposal site.

2.3 Other hazards

Hot CTO or CTO in contact with hot materials may self-combust, especially if immersed in mineral wool.

CTO may contain small amounts of extremely flammable and very toxic hydrogen sulphide (H₂S). The gas can accumulate over time in the headspace of CTO storage tanks and truck tanks.

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

3 COMPOSITION/INFORMATION ABOUT COMPONENTS

3.1 Substances

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

Hazardous substance	Conc. (w/w %)	CAS/ EC No./Index No.	Hazard class and category codes	Hazard statements
Crude tall oil - CTO*	100	-/ 931-433-1	Skin Sens. 1	H317

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* Note: The product is defined as a UVCB substance¹ and is composed of varying combinations of free fatty acids, resin acids and neutral substances.

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.

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.

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.

4.2 The most important symptoms and effects, both acute and delayed

Inhalation: May cause coughing, throat discomfort and irritation to respiratory tract.

Skin contact: May cause an allergic skin reaction.

Contact with eyes: May cause irritation of the eyes.

Ingestion: May cause nausea, vomiting and diarrhoea.

4.3 Indication of any immediate medical attention and special treatment required

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 FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable media:

Powder, foam, CO₂ and water spray.

Unsuitable media:

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

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

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5.2 Specific hazards that the substance or mixture can cause

In the outbreak of fire, irritating, toxic and offensive gases, for instance carbon oxides and sulphur oxides are produced.

5.3 Advice for firefighters

Wear full-body protective clothing and breathing masks when fighting fires. Wear full-body protective clothing.

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. The product is not considered flammable but may burn at high temperatures.

6 MEASURES IN THE EVENT OF UNINTENTIONAL EMISSIONS

6.1 Personal precautions, protective equipment and emergency measures

Ensure adequate ventilation. Do not get on skin or in the eyes. Use protective gloves and other necessary protective equipment.

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. Avoid persistent or repeated skin contact. Do not breathe vapours, mist, fumes. Remove and wash contaminated clothing before reuse. Ensure adequate ventilation. Smoking is prohibited.

7.2 Conditions for safe handling, including any incompatibilities

CTO may contain small amounts of hydrogen sulphide (H₂S). The gas can accumulate over time in the headspace of CTO storage tanks and truck tanks. The gas may pose a hazard to humans.

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Store tightly closed in a dry and well ventilated area. Store in containers that are correctly labelled. Storage temperature: 30-80°C. Store in separate container away from heat and ignition sources. Containers must be made of metal or high-density polyethylene (HDPE) and kept tightly shut.

7.3 Specific end use(s)

No data available.

8 LIMITATION OF EXPOSURE/PERSONAL PROTECTION

8.1 Control parameters

Exposure limits:

Derived no effect level (DNEL) - Employer

Exposure pattern	Exposure route	Descriptors	DNEL	Most sensitive endpoint
Acute systemic effects	Skin	Not quantifiable	-	No effects
	Inhalation	Not quantifiable	-	No effects
	Oral	Not quantifiable	-	No effects
Acute local effects	Skin	DNEL	16.75 µg/cm ²	Sensitisation
	Inhalation	Not quantifiable	-	No effects
Long-term systemic effects	Skin	DNEL	>10 mg/kg/d	Repeated dose toxicity
	Inhalation	DNEL	>35.3 mg/m ³	Repeated dose toxicity
Long-term local effects	Skin	Not quantifiable	-	No effects
	Inhalation	Not quantifiable	-	No effects

Hygienic limit value, Sweden

Substance	Level limit value		Short-time value		Note Source	Year
	mg/m ³	ppm	mg/m ³	ppm		
Oil mist, including oil fumes	1	-	3	-	AFS 2018:1	1990

8.2 Limitation of exposure

Technical measures:

CTO may contain small amounts of extremely flammable and very toxic hydrogen sulphide (H₂S). The gas can accumulate over time in the headspace of CTO storage tanks and truck tanks.

Appropriate risk management measures include local exhaust ventilation, standard procedures for proper venting of tanks, use of personal gas detectors/alarms, cordoning off of workspaces, clearly posted signs and use of suitable respiratory protection. Install an eye washing station in the workplace.

Eye/face protection:

Use goggles if there is a risk of splashes, vapours or gases.

Dermal protection/Protective gloves:

Use protective gloves if there is a risk of direct contact or splashes. Use chemical-resistant protective gloves that comply with EN374. It is recommended to use a glove material made of nitrile rubber or polyvinyl alcohol (PVA) with a breakthrough time greater than four hours. A thickness of at

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least 0.12 mm is recommended for splashes or exposure of up to 10 minutes. A thickness of at least 0.38 mm is recommended for exposure of up to 4 hours.
Use protective clothing if there is a risk of direct contact.

Respiratory protection:

Type A gas filters should be used if there is a risk of inhaling vapours, fumes and mist (e.g. when cleaning, working in enclosed spaces and tanks).

Limitation of environmental exposure:

Collect spillage. Prevent dispersal of spilled materials to waterways, drains and sewers and pollution of soil and vegetation.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state:	Viscous, oily liquid	
Colour:	Brown to black	
Odour:	Weak odour of organic sulphur compounds	
Odour threshold:	Not applicable	
pH_	Not applicable	
Melting point/freezing point:	Not applicable	
Initial boiling point and boiling range:	150°C	ASTM D6352
	150-700°C	ASTM D6352
Flash point:	>150°C	ASTM D93
Evaporation rate:	Not applicable	
Flammability:	Not inflammable	
Lower and upper explosive (flammable) limits:	Not applicable	
Vapour pressure:	Not applicable	
Vapour density:	Not applicable	
Relative density:	0,980±0,015 (15°C)	SS-EN ISO 12185
Solubility in water:	Negligible	
Partition coefficient: n-octanol/water:	Not applicable	
Auto-ignition temperature:	Not applicable	
Decomposition temperature:	Not applicable	
Viscosity:	10-20 cSt (90°C)	ASTM D445
	65±15cSt (50°C)	ASTM D445
	375±50cSt (20°C)	Calculated according to ASTM D341
Explosive properties:	Not explosive	
Oxidising properties:	Not oxidising	

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9.2 Other information

No data available.

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. The substance is not flammable but is combustible.

10.3 Possibility of hazardous reactions

No specific hazardous reactions are expected to occur.

10.4 Conditions to avoid

Avoid overheating, heat and ignition sources. Avoid temperatures above 150°C. Hot CTO or CTO in contact with hot materials may self-combust, especially if immersed in mineral wool. Avoid direct contact with air.

10.5 Incompatible materials

Strong oxidising agents.

10.6 Hazardous decomposition products

Incomplete combustion/thermal decomposition generates carbon oxides, nitrogen oxides (NO_x), sulphur oxides and irritating smoke. H₂S gas can accumulate over time in the headspace of CTO storage tanks and truck tanks.

11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

a) Acute toxicity

CTO is not classified for acute toxicity.

LD50 Oral: >2,000 mg/kg bw (rat) (OECD 423)

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

b) Skin corrosion/irritation

CTO is not considered to be irritating to skin. No skin reactions were reported in a skin irritation test where observations were carried out for 72 hours (rabbit)

c) Serious eye damage/irritation

CTO is not considered to be corrosive/irritating to eyes. Minor effects were observed in an eye irritation test after 1 hour of observation, but at no other time (rabbit).

d) Respiratory - skin sensitisation

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CTO is a (weak) skin sensitiser. The skin sensitising potential of CTO was shown in the local lymph node analysis (OECD 429).

e) Germ cell mutagenicity

CTO is not considered to be mutagenic according to the OECD 471, 473 and 476 Test Guidelines.

f) Carcinogenicity

CTO is not considered to cause cancer.

g) Reproductive toxicity

CTO is not classified for reproductive toxicity.

h) Specific target organ toxicity (single exposure)

CTO is not considered to cause organ damage through single exposures.

i) Specific target organ toxicity (repeated exposure)

CTO is not considered to cause organ damage through long-term or repeated exposures.

j) Aspiration hazard

CTO is not considered to cause aspiration toxicity.

12 ECOLOGICAL INFORMATION

12.1 Toxicity

CTO is not classed as toxic for the environment.

Acute toxicity for fish:

LL50, 96h, *Danio rerio* (OECD 203): >20 mg/l

NOELR: ≥ 6.25 mg/L

Acute toxicity for algae:

EL50, 72 h, *Desmodesmus subspicatus* (OECD 202): > 100 mg/l

NOELR: ≥ 100 mg/L

Acute toxicity for shellfish:

EL50, 48 h, *Daphnia magna* (water flea) (OECD 201): 32 mg/l

NOELR (48 hours): 6.25 mg/l

NOELR (21 days): > 1 mg/l

12.2 Persistence and degradability

CTO is considered readily biodegradable. 79.4 - 83% of the substance is degraded after 28 days, meeting the '10-day window' criterion (OECD 301F).

12.3 Bioaccumulative potential

There is no data on the bioaccumulation of CTO as a whole substance, but there is however data on some of the constituents. Some of the constituents of block 10 (Aldehydes) meet the criteria for PBT

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(resin aldehydes) or vPvB (neoabietal). Some of the constituents of block 12 (sitosterol and analogues) meet the criteria for vPvB.

12.4 Mobility in soil

The product has low soil mobility. The product forms a thin layer of oil on the water surface. The highest individual K_{oc} was calculated for sitosterol and analogues: 4.96E+06.

12.5 Results of PBT and vPvB assessment

Some of the constituents of block 10 (Aldehydes) meet the criteria for PBT (resin aldehydes) or vPvB (neoabietal). Some of the constituents of block 12 (sitosterol and analogues) meet the criteria for vPvB.

12.6 Other adverse effects

No known other effects.

13 WASTE TREATMENT

13.1 Waste treatment methods

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

CTO is not classed as hazardous goods.

14.1 UN number: N/A

14.2 Transport information: N/A

14.3 Transport hazard class: N/A

14.4 Packing group: N/A

14.5 Environmental hazards: N/A

14.6 Additional precautions: N/A

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

In case of bulk transport at sea: Product name: *Tall oil, crude.*

Pollutant type: Y

Ship type: 2

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15 REGULATORY INFORMATION

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

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).

National regulations:

The Swedish Work Environment Authority's regulation and general guidelines on hygienic limit values, AFS 2018:1.

The Swedish Work Environment Authority's regulations and general guidelines on chemical work environment risks, AFS 2011:19.

Waste ordinance (2011:927).

15.2 Chemical safety assessment

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

16 OTHER INFORMATION

Abbreviations

AFS: The Swedish Work Environment Authority's statutes

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

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

vPvB: Very persistent and bioaccumulative substances. A vPvB substance complies with the criteria in part 2, annex XIII in REACH.

Meaning of phrases

Skin Sens. 1: Skin sensitisation, Category 1

H317: May cause an allergic skin reaction.

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.

Document history

Version	Date	Comment
7	10/02/2020	Revision of section 8, 9, 15.

Annexes - Exposure scenario

ES1: On-site manufacture and use of CTO without emission into waterways

ES2: Use in fractionation

ES3: Use as fuel in energy production, including formulation