SAFETY DATA SHEET

Version #: 6,0
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Name of the substance	Alpha - pinene
Trade name of the substance	SYLVAPINE™ A (Alpha Pinene)
Identification number	201-291-9 (EC number)
Registration number	01-2119519223-49-0005
Synonyms	None.
SDS number	8570
Product code	200000000091

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

Identified uses	Monomers
Uses advised against	None known.

1.3. Details of the supplier of the safety data sheet

Company name	Kraton Chemical B.V.
Address	Transistorstraat 16, 1322 CE Almere, The Netherlands
Phone	+31 36 546 2800
Email address	regulatory.eu@kraton.com

1.4. Emergency telephone number EU NCEC +44 1865 407 333

General in EU	112 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Austria National Poisons Information Centre	+431 406 4343 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Belgium National Poisons Control Centre	070 245 245 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Bulgaria National Toxicological Information Centre	+359 2 9154 233 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Croatia Poisons Information Centre	+385 1 2348 342 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Cyprus Poison Centre	1401 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Czech Republic National Poisons Information Centre	+420 224 919 293, or +420 224 915 402 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Denmark National Poisons Control Centre	+45 82 12 12 12 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Estonia National Poisons Information Centre	16662 or abroad: (+372) 626 9390 (Monday 9:00AM to Saturday 9:00AM (closed on Sundays and on national holidays). SDS/Product information may not be available for the Emergency Service.)
Finland National Poison Information Centre	(09) 471 977 (direct) or (09) 4711 (exchange) (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
France National Poisons Control Centre	ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Greece Poison Information Centre telephone number	(0030) 2107793777 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

Hungary National Emergency Phone Number	+36-80-201-199 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Iceland Poison Centre	(+354) 543 2222 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Latvia Emergency medical aid	113
Latvia Poison and Drug Information Centre	+371 67042473 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Lithuania Neatidėliotina informacija apsinuodijus	+370 5 236 20 52 or +37068753378 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Malta Accident and Emergency Department	2545 4030 (Hours of operation not provided. SDS/Product information may not be available for the Emergency Service.)
Netherlands National Poisons Information Centre (NVIC)	NVIC: +31 (0)88 755 8000 (Only for the purpose of informing medical personnel in cases of acute intoxications)
Norway Norwegian Poison Information Centre	22 59 13 00 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Portugal Poison Centre	800 250 250 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Romania Biroul RSI si Informare Toxicologica	021.318.36.06 (Available 8:00AM-3:00PM. SDS/Product information may not be available for the Emergency Service.)
Slovakia National Toxicological Information Centre	+421 2 5477 4166 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Spain Toxicology Information Service	+ 34 91 562 04 20 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Sweden National Poison Information Centre	112 - and ask for Poison Information (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)
Switzerland Tox Info Suisse	145 (Available 24 hours a day. SDS/Product information may not be available for the Emergency Service.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

Classification according to Regulation (EC) No 1272/2008 as amended

Physical hazards		
Flammable liquids	Category 3	H226 - Flammable liquid and vapour.
Health hazards		
Acute toxicity, oral	Category 4	H302 - Harmful if swallowed.
Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Skin sensitisation	Category 1	H317 - May cause an allergic skin reaction.
Aspiration hazard	Category 1	H304 - May be fatal if swallowed and enters airways.
Environmental hazards		
Hazardous to the aquatic environment, acute aquatic hazard	Category 1	H400 - Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term aquatic hazard	Category 1	H410 - Very toxic to aquatic life with long lasting effects.

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains: Alpha - pinene

Hazard pictograms

Signal word Danger

Hazard statements

H226	Flammable liquid and vapour.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P235	Keep cool.
P261	Avoid breathing mist/vapours.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.

Response

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTRE/doctor.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.

Storage Not available.

Disposal Not available.

Supplemental label information None.

2.3. Other hazards Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapour. May cause flash fire or explosion. This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII. The product does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1. Substances

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Alpha - pinene	100	80-56-8 201-291-9	01-2119519223-49-0005	-	

Classification: Flam. Liq. 3;H226, Acute Tox. 4;H302;(ATE: 500 mg/kg), Skin Irrit. 2;H315, Skin Sens. 1;H317, Asp. Tox. 1;H304, Aquatic Acute 1;H400, Aquatic Chronic 1;H410

List of abbreviations and symbols that may be used above

#: This substance has been assigned Union workplace exposure limit(s).
M: M-factor
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.
All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information Take off all contaminated clothing immediately. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

4.1. Description of first aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists.

Ingestion	Call a physician or poison control centre immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
4.2. Most important symptoms and effects, both acute and delayed	Aspiration may cause pulmonary oedema and pneumonitis. Direct contact with eyes may cause temporary irritation. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.
4.3. Indication of any immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

General fire hazards	Flammable liquid and vapour.
5.1. Extinguishing media	
Suitable extinguishing media	Water fog. Foam. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
5.2. Special hazards arising from the substance or mixture	Vapours may form explosive mixtures with air. Vapours may travel considerable distance to a source of ignition and flash back. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. To reduce potential for static discharge, use proper bonding and grounding procedures. This liquid may accumulate static electricity when filling properly grounded containers. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed. Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
5.3. Advice for firefighters	
Special protective equipment for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Special fire fighting procedures	In case of fire and/or explosion do not breathe fumes. Wear suitable protective equipment. Move containers from fire area if you can do so without risk.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Remove all possible sources of ignition in the surrounding area. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapours. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material.
For emergency responders	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Remove all possible sources of ignition in the surrounding area. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Avoid breathing mist/vapours. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Transfer by mechanical means such as vacuum truck to a salvage tank or other suitable container for recovery or safe disposal. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
6.2. Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Use appropriate containment to avoid environmental contamination.
6.3. Methods and material for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil etc) away from spilled material. Take precautionary measures against static discharge. Use only non-sparking tools. This product is miscible in water. Prevent entry into waterways, sewer, basements or confined areas. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use.
6.4. Reference to other sections	For personal protection, see section 8 of the SDS. For waste disposal, see section 13 of the SDS.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Explosion-proof general and local exhaust ventilation. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Handling operations that can promote accumulation of static charges include but are not limited to: mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Do not taste or swallow. Avoid breathing mist/vapours. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices. Follow all SDS/label precautions even after container is emptied because they may retain product residues.

7.2. Conditions for safe storage, including any incompatibilities

Store locked up. Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Eliminate sources of ignition. Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity. Store in a cool, dry place out of direct sunlight. Store in tightly closed container. Keep containers closed when not in use. Store in a well-ventilated place. Store at ambient temperature and atmospheric pressure. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Austria

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	Ceiling	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil
	TWA (MAK)	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Belgium. Exposure Limit Values

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	TWA	20 ppm

Bulgaria

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	TWA	300 mg/m3	Turpentine, oil

Croatia

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	MAC	566 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil
	STEL (STACS)	850 mg/m3	Turpentine, oil
		150 ppm	Turpentine, oil

Czech Republic

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	Ceiling	800 mg/m3	Turpentine, oil
	TWA	300 mg/m3	Turpentine, oil

Denmark. Exposure Limit Values

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	TLV	25 ppm

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances (Regulation No. 105/2001, Annex), as amended

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	STEL	300 mg/m3
		50 ppm
	TWA	150 mg/m3
		25 ppm

Finland

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	280 mg/m3	Turpentine, oil
		50 ppm	Turpentine, oil
	TWA	140 mg/m3	Turpentine, oil
		25 ppm	Turpentine, oil

France

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	VME	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Greece

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	840 mg/m3	Turpentine, oil
		150 ppm	Turpentine, oil
	TWA	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Hungary

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	560 mg/m3	Turpentine, oil
	TWA	560 mg/m3	Turpentine, oil

Iceland

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	TWA	140 mg/m3	Turpentine, oil
		25 ppm	Turpentine, oil

Ireland

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	840 mg/m3	Turpentine, oil
		150 ppm	Turpentine, oil
	TWA	112 mg/m3	Turpentine, oil
		20 ppm	Turpentine, oil

Italy. Occupational Exposure Limits

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	TWA	20 ppm

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	STEL	300 mg/m3
		50 ppm
	TWA	150 mg/m3
		25 ppm

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	TLV	140 mg/m3
		25 ppm

Poland

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	300 mg/m3	Turpentine, oil
	TWA	112 mg/m3	Turpentine, oil

Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	TWA	20 ppm

Romania

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	500 mg/m3	Turpentine, oil
	TWA	400 mg/m3	Turpentine, oil

Slovakia

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	850 mg/m3	Turpentine, oil
		150 ppm	Turpentine, oil
	TWA	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Slovenia

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	TWA	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Spain. Occupational Exposure Limits

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	TWA	113 mg/m3
		20 ppm

Sweden. OELs (Annex 1). Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2018:1), as amended

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	STEL	300 mg/m3
		50 ppm
	TWA	150 mg/m3
		25 ppm

Switzerland

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil
	TWA	560 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value
Alpha - pinene (CAS 80-56-8)	STEL	224 mg/m3

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value
		40 ppm
	TWA	112 mg/m3
		20 ppm

United Kingdom

Components	Type	Value	Form
Alpha - pinene (CAS 80-56-8)	STEL	850 mg/m3	Turpentine, oil
		150 ppm	Turpentine, oil
	TWA	566 mg/m3	Turpentine, oil
		100 ppm	Turpentine, oil

Biological limit values No biological exposure limits noted for the ingredient(s).

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs)

General population

Components	Value	Assessment factor	Notes
Alpha - pinene (CAS 80-56-8)			
Long-term, Systemic, Dermal	0,225 mg/kg bw/day	1050	Effect on fertility
Long-term, Systemic, Inhalation	0,674 mg/m3	150	Effect on fertility
Long-term, Systemic, Oral	0,225 mg/kg bw/day	1050	Effect on fertility

Workers

Components	Value	Assessment factor	Notes
Alpha - pinene (CAS 80-56-8)			
Long-term, Systemic, Dermal	0,542 mg/kg bw/day	525	Effect on fertility
Long-term, Systemic, Inhalation	3,8 mg/m3	75	Effect on fertility

Predicted no effect concentrations (PNECs)

Components	Value	Assessment factor	Notes
Alpha - pinene (CAS 80-56-8)			
Freshwater	0,606 µg/l	500	
Marine water	0,061 µg/l	5000	
Secondary poisoning	8,76 mg/kg	90	Oral
Sediment (freshwater)	157 µg/kg		
Sediment (marine water)	15,7 µg/kg		
Soil	31,7 µg/kg		
STP	0,2 mg/l	10	

Exposure guidelines

Norway Exposure Limit Values: Skin designation

Alpha - pinene (CAS 80-56-8) Can be absorbed through the skin.

Switzerland SUVA Limit Values at the Workplace: Skin designation

Alpha - pinene (CAS 80-56-8) Can be absorbed through the skin.

8.2. Exposure controls

Appropriate engineering controls Explosion-proof general and local exhaust ventilation. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station and safety shower.

Individual protection measures, such as personal protective equipment

General information Use personal protective equipment as required. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

Eye/face protection Wear safety glasses with side shields (or goggles). Face shield is recommended.

Skin protection

- Hand protection	When handling hot material, use heat resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Wear suitable gloves tested to EN374. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform about the breakthrough time of the glove material. Recommended gloves include rubber, neoprene, nitrile or viton. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes. For short-term/splash protection we recommend the same, but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness should be typically greater than 0.35 mm. This recommendation is advisory only. It may not be appropriate for all workplaces. It should not be construed as offering an approval for any specific use scenario. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes.
- Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
Hygiene measures	When using, do not eat, drink or smoke. Eye wash fountain and emergency showers are recommended. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.
Environmental exposure controls	Inform appropriate managerial or supervisory personnel of all environmental releases. Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. Fume scrubbers, filters or engineering modifications to the process equipment may be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid.
Form	Liquid.
Colour	Colorless
Odour	Turpentine.
Melting point/freezing point	-58 °C (-72,4 °F)
Boiling point or initial boiling point and boiling range	> 152 - < 157 °C (> 305,6 - < 314,6 °F)
Flammability	Not applicable.
Flash point	29,0 °C (84,2 °F) Setaflash Closed Cup
Auto-ignition temperature	255 °C (491 °F)
Decomposition temperature	Not available.
pH	Not available.
Kinematic viscosity	Not available.
Solubility	
Solubility (water)	<0,04 mg/l at 20°C
Vapour pressure	Not available.
Density and/or relative density	
Density	860,00 kg/m3 at 15,5°C
Vapour density	4,8 (air=1,0)
Particle characteristics	Not available.

9.2. Other information

9.2.1. Information with regard to physical hazard classes	No relevant additional information available.

9.2.2. Other safety characteristics

Chemical family	Turpentine.
Explosivity	>0,8 % Explosive limits in air, lower, % by volume
Flammability (temperature)	Flammable
Molecular weight	136,23 g/mol
Percent volatile	99,9 % estimated
Pounds per gallon	7,2 at 15°C

Specific gravity	0,86 ASTM D802-82 at 15°C/15°C; (water=1)
Weighted solids	0 %

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Strong oxidising agents. Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
10.5. Incompatible materials	Strong oxidising agents.
10.6. Hazardous decomposition products	Upon decomposition this product emits acrid dense smoke with carbon dioxide, carbon monoxide, water and other products of combustion.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation Prolonged inhalation may be harmful.

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

Eye contact Direct contact with eyes may cause temporary irritation.

Alpha - pinene	Irritation Corrosion - Eye, No eye irritation.; Data is for similar product. Result: Negative Species: New Zealand white rabbit Organ: Eye Observation Period: 72 hr Notes: OECD 405

Ingestion Harmful if swallowed. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms Aspiration may cause pulmonary oedema and pneumonitis. Skin irritation. May cause redness and pain. May cause an allergic skin reaction. Dermatitis. Rash.

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity May be fatal if swallowed and enters airways.

Components	Species	Test Results
Alpha - pinene (CAS 80-56-8)		
Acute		
Dermal		
LD50	New Zealand white rabbit	> 2000 mg/kg Data is for similar product.
Oral		
LD50	Sprague-Dawley rat	500 mg/kg OECD 423
Subacute		
Inhalation		
LOAEL	Fischer 344 rat	> 25 ppm, 14 weeks male;Data is for similar product.; OECD 413
NOAEL	Fischer 344 rat	> 200 ppm, 14 weeks female;Data is for similar product.; OECD 413
Oral		
NOAEL	Mouse	> 50 ppm, 14 weeks OECD 413
	Sprague-Dawley rat	250 mg/kg/day No toxicity to reproduction; Data is for similar product.; OECD 414

Skin corrosion/irritation Causes skin irritation.

Corrosivity

Alpha - pinene	Irritation Corrosion - Skin, Skin irritation.; Data is for similar product. Result: Positive Species: Human Organ: Skin Notes: ECVAM v1,8

Serious eye damage/eye irritation Direct contact with eyes may cause temporary irritation.

Eye contact

Alpha - pinene	Irritation Corrosion - Eye, No eye irritation.; Data is for similar product. Result: Negative Species: New Zealand white rabbit Organ: Eye Observation Period: 72 hr Notes: OECD 405

Respiratory sensitisation Not available.

Skin sensitisation May cause an allergic skin reaction.

Skin Sensitisation

Alpha - pinene	29 % Local Lymph Node Assay - Lowest Concentration Producing Reaction, May cause sensitization by skin contact.; Data is for similar product. Result: Positive Species: Mouse Organ: Skin Notes: OECD 429

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Mutagenicity

Alpha - pinene	Genetic Toxicity - in Vivo, Data is for similar product. Result: Negative Species: Mouse Notes: OECD 474 Germ Cell Mutagenicity: Ames, No data available to indicate product or any components present at greater than 0,1% are mutagenic or genotoxic.; Data is for similar product. Result: Negative Species: Salmonella typhimurium Notes: OECD 471 Germ Cell Mutagenicity: Chromosome Abberation, This material is considered to be non-clastogenic to human lymphocytes in vitro.; Data is for similar product. Result: Negative Species: Human Notes: OECD 473 In vitro gene mutation study in mammalian cells, Data is for similar product. Result: Negative Species: Mouse Notes: OECD 476

Carcinogenicity No data available to indicate product or any components present at greater than 0.1% are carcinogenic.

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard May be fatal if swallowed and enters airways.

Mixture versus substance information No information available.

11.2. Information on other hazards

Endocrine disrupting properties The product does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Other information Not available.

SECTION 12: Ecological information

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

Components		Species	Test Results
Alpha - pinene (CAS 80-56-8)			
	EC10	Activated sewage sludge	38 mg/l, 3 hr Data is for similar product.; OECD 209

Components		Species	Test Results
	EC50	Activated sewage sludge	326 mg/l, 3 hr Data is for similar product.; OECD 209
		Algae (Pseudokirchneriella subcapitata)	48 hr >> Water solubility; Data is for similar product.; OECD 201
	LOEC	Algae (Pseudokirchneriella subcapitata)	0,494 mg/l, 48 hr Data is for similar product.; OECD 201
	NOEC	Algae (Pseudokirchneriella subcapitata)	0,247 mg/l, 48 hr Data is for similar product.; OECD 201
Aquatic			
Crustacea	EC50	Daphnia magna	0,475 mg/l, 48 hr Data is for similar product.; OECD 202
Fish	LC50	Danio rerio	0,303 mg/l, 96 hr Data is for similar product.; OECD 203
	NOEC	Carp (Cyprinus carpio)	96 hr >> Water solubility; Data is for similar product.; OECD 203

12.2. Persistence and degradability The product is biodegradable.

Biodegradability

Percent Degradation (Aerobic Biodegradation)

Alpha - pinene: 76 %, Data is for similar product.
Result: Readily biodegradable
Species: Activated sewage sludge
Test Duration: 28 d

12.3. Bioaccumulative potential

Partition coefficient n-octanol/water (log Kow)

Alpha - pinene: 4,49, at 25°C

12.4. Mobility in soil No data available.

12.5. Results of PBT and vPvB assessment This substance does not meet vPvB / PBT criteria of Regulation (EC) No 1907/2006, Annex XIII.

12.6. Endocrine disrupting properties The product does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7. Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

EU waste code The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Disposal methods/information Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Special precautions Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number UN2368

14.2. UN proper shipping name alpha-PINENE

14.3. Transport hazard class(es)

Class 3

Subsidiary risk -

Label(s) 3

Hazard No. (ADR) 30

Tunnel restriction code D/E

14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN2368
14.2. UN proper shipping name	alpha-PINENE
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number	UN2368
14.2. UN proper shipping name	alpha-PINENE
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
Label(s)	3
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

14.1. UN number	UN2368
14.2. UN proper shipping name	alpha-Pinene
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
ERG Code	3L
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

14.1. UN number	UN2368
14.2. UN proper shipping name	alpha-PINENE, MARINE POLLUTANT
14.3. Transport hazard class(es)	
Class	3
Subsidiary risk	-
14.4. Packing group	III
14.5. Environmental hazards	
Marine pollutant	Yes
EmS	F-E, S-E
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

ADN; ADR; IATA; IMDG; RID

Marine pollutant

General information IMDG Regulated Marine Pollutant.

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended

Not listed.

Regulation (EU) 2019/1021 On persistent organic pollutants (recast), as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended

Not listed.

Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended

Not listed.

Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended

Not listed.

Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA

Not listed.

Authorisations

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Not listed.

Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.

Not listed.

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended

Not listed.

Other regulations The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.

15.2. Chemical safety assessment Chemical Safety Assessment has been carried out. A Chemical Safety Assessment has been carried out for this substance.

Water hazard class

AwSV	WGK3

SECTION 16: Other information

List of abbreviations

ADN: European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterways.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
AGW: Occupational threshold limit value (Arbeitsplatzgrenzwert – Germany).
CAS: Chemical Abstract Service.
CEN: European Committee for Standardization.
IATA: International Air Transport Association.
IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk.
IMDG: International Maritime Dangerous Goods.
MAC: Maximum Allowed Concentration.
MARPOL: International Convention for the Prevention of Pollution from Ships.
PBT: Persistent, bioaccumulative and toxic.
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
STEL: Short term exposure limit.
TLV: Threshold Limit Value.
TWA: Time Weighted Average.
VLE: Exposure Limit Value.
VME: Exposure Average Value.
vPvB: Very persistent and very bioaccumulative.

References	Not available.
Information on evaluation method leading to the classification of mixture	Not applicable.
Full text of any statements, which are not written out in full under sections 2 to 15	H226 Flammable liquid and vapour. H302 Harmful if swallowed. H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects.
Revision information	Product and Company Identification: Product and Company Identification SECTION 2: Hazards identification: Supplemental label elements SECTION 2: Hazards identification: Supplemental label information SECTION 3: Composition/information on ingredients: Component information SECTION 16: Other information: Disclaimer GHS: Classification
Training information	Follow training instructions when handling this material.

Disclaimer

KRATON CORPORATION urges each customer or recipient of this SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this SDS and any hazards associated with the product. The information set forth in this document, as of the date of this document, is based on present knowledge, obtained from reliable sources and made to our reasonable ability and in good faith. Such information is made without any warranty or guarantee whatsoever, and shall establish no legal duty or responsibility on the part of the author(s), their employer or its affiliates. The information given is designed only as guidance and its completeness is not guaranteed. The information is not a guarantee of any specific product properties, features, qualities or specifications.

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Annex to the extended Safety Data Sheet (eSDS)

Table of contents

1 - Exposure Scenario Worker

1. Polymerization (Bulk and batch)

List of use descriptors

Sector(s) of Use	SU3: Industrial uses. SU8: Manufacture of bulk, large scale chemicals (including petroleum products). SU9: Manufacture of fine chemicals
Product categories [PC]:	Not assigned.
Name of contributing environmental scenario and corresponding ERC	Polymerization (Bulk and batch) ERC6c: Industrial use of monomers for manufacture of thermoplastics .
List of names of contributing worker scenarios and corresponding PROCs	Polymerization (Bulk and batch) PROC1: Use in closed process, no likelihood of exposure. PROC2: Use in closed, continuous process with occasional controlled exposure. PROC3: Use in closed batch process (synthesis or formulation). PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises. PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC15: Use as laboratory reagent
Further explanations	
Other Process or activity	Polymer production. Laboratory activities. Bulk transfers. Product sampling. Storage. Equipment cleaning and maintenance. Waste management.

2.1.1. Contributing scenario controlling environmental exposure for Polymerization (Bulk and batch)

Product characteristics

Physical state	liquid
Viscosity	
Dynamic viscosity	1,3 cP 25 °C

Amounts used

Fraction of EU tonnage used in region:	1
Regional use tonnage (tons/year):	5500 tons/year
Fraction of Regional tonnage used locally:	1

Frequency and duration of use

Batch process	Continuous release
Continuous process	Continuous release

Environment factors not influenced by risk management

Flow rate of receiving surface water (m3/d):	18000
Local freshwater dilution factor:	10
Local marine water dilution factor:	100

Other given operational conditions affecting environmental exposure

	Emission days		Emission factors		
Type	**(days/year)**	**Air**	**Soil**	**Water**	**Remarks**
Emission days (days/year):	365	0,05	0	0,00008	

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Indoor use. Process with efficient use of raw materials. Volatile compounds subject to air emission controls. Controlled application to agricultural soil.

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Not available.
Soil	Not available.
Water	Not available.
Sediment	Not available.
Organisational measures to prevent/limit release from site	Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/treatment plant (m3/d)

Type	Municipal STP. Onsite STP.
Discharge rate	Not available.
Sludge treatment technique	Do not use sludge as fertiliser

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment

Suitable waste treatment	Water treatment chemicals . Precipitation . Aerobic biological treatment . Sludge treatment e.g. thermal sludge reduction . Hazardous waste incineration.
Treatment effectiveness	Not available.

Conditions and measures related to external recovery of waste

Fraction of used amount transferred to external waste treatment

Suitable recover operations	External recovery and recycling of waste should comply with applicable local and/or national regulations.
Additional good practice advice beyond the REACH CSA	None.

2.2.1. Contributing scenario controlling worker exposure for Polymerization (Bulk and batch)

Product characteristics

Concentration of the substance in a mixture	Covers percentage substance in the product up to 100 % (unless stated differently). Equipment cleaning and maintenance: Covers percentage substance in the product up to 5 %. Disposal of wastes: Covers percentage substance in the product up to 1 %.
Physical form of the product	liquid
vapour pressure	690 Pa

Frequency and duration of use

	Duration	Frequency of use	Remarks
Exposure duration			Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Other given operational conditions affecting workers exposure

Area of use	Room size	Temperature	Ventilation rate	Remarks
				Assumes activities are at ambient temperature (unless stated differently).

Other relevant operational conditions

Not available.

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release	Ensure material transfers are under containment or extract ventilation. General exposures (closed systems): Handle substance within a closed system.. Store substance within a closed system..
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure samples are obtained under containment or extract ventilation..
Organizational measures to prevent/limit releases, dispersion and exposure	Waste management: Ensure containment of the emission source Drain down system prior to equipment break-in or maintenance. Equipment cleaning and maintenance: Drain down system prior to equipment break-in or maintenance..
Conditions and measures related to personal protection, hygiene and health evaluations	Use suitable eye protection and gloves.

3. Exposure Estimation

Environment

Compartment	PEC	RCR (PEC/PNEC)	Method	Remarks
Release fraction to air from wide dispersive use (regional only):	4,79E+03 kg/day	The use is assessed to be safe.	Used ECETOC TRA model.	
Release fraction to wastewater from wide dispersive use:	7,41E+02 kg/day	The use is assessed to be safe.	Used ECETOC TRA model.	

freshwater	3,40E+01 kg/day	The use is assessed to be safe.	Used ECETOC TRA model.	
Release fraction to soil from wide dispersive use (regional only):	1,83E+02 kg/day	The use is assessed to be safe.	Used ECETOC TRA model.	

Health

	Exposure level	RCR	Method	Remarks
inhalation exposure	5,3 mg/m³	The use is assessed to be safe.	Used ART model.	Continuous process
Dermal exposure	110 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Continuous process
inhalation exposure	3,9 mg/m³	The use is assessed to be safe.	Used ART model.	Batch process
Dermal exposure	30 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Batch process
inhalation exposure	5,3 mg/m³	The use is assessed to be safe.	Used ART model.	Polymer production
Dermal exposure	110 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Polymer production
inhalation exposure	0,007 ppm	The use is assessed to be safe.	Used ECETOC TRA model.	General exposures (closed systems)
Dermal exposure	28 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	General exposures (closed systems)
inhalation exposure	2,8 mg/m³	The use is assessed to be safe.	Used ART model.	Bulk transfers
				Avoid carrying out activities involving exposure for more than 1 hour.
Dermal exposure	112 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Bulk transfers
				Avoid carrying out activities involving exposure for more than 1 hour.
inhalation exposure	0,7 mg/m³	The use is assessed to be safe.	Used ART model.	Product sampling
				Avoid carrying out activities involving exposure for more than 15 minutes.
Dermal exposure	112 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Product sampling
				Avoid carrying out activities involving exposure for more than 15 minutes.
inhalation exposure	0,7 ppm	The use is assessed to be safe.	Used ECETOC TRA model.	Equipment cleaning and maintenance
				Avoid carrying out activities involving exposure for more than 15 minutes.

Dermal exposure	112 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Equipment cleaning and maintenance Avoid carrying out activities involving exposure for more than 15 minutes.
inhalation exposure	0,35 ppm	The use is assessed to be safe.	Used ECETOC TRA model.	Disposal of wastes Avoid carrying out activities involving exposure for more than 15 minutes.
Dermal exposure	2,8 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Disposal of wastes Avoid carrying out activities involving exposure for more than 15 minutes.
inhalation exposure	2,8 mg/m³	The use is assessed to be safe.	Used ART model.	Laboratory activities Avoid carrying out activities involving exposure for more than 1 hour.
Dermal exposure	28 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Laboratory activities Avoid carrying out activities involving exposure for more than 1 hour.
inhalation exposure	1,6 mg/m³	The use is assessed to be safe.	Used ART model.	Transfer from/pouring from containers Avoid carrying out activities involving exposure for more than 1 hour.
Dermal exposure	112 µg/cm²	The use is assessed to be safe.	Used ECETOC TRA model.	Transfer from/pouring from containers Avoid carrying out activities involving exposure for more than 1 hour.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.