Material Safety Data Sheet

UCY-TO1-TH
Item number 10-072

Revision date: March 26th, 2021

SECTION 1: Identification of the substance/mixture and of the company/undertaking

· **1.1 Product identifier**
Trade name: UCY-TO1-TH

· **Substance name according to REACH identification requirements:**
Reaction mass of hydrocarbons, terpene processing by-products, turpentine oil from pulping processes and terpineol multiconstituent

· **EC number:** 273-309-3 / 232-350-7 / 701-188-3

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
Relevant identified uses: production and distribution of the product, formulation and use of mixtures based on UCY-TO1-TH, fuel

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**

UCY business services & trading GmbH
Street: Am Villepohl 4
Post code / town: DE-53347 Alfter
Phone: +49 228 2428 732
Facsimile: +49 228 2428 731
E-mail: sales@ucy-energy.com

· **1.4 Emergency telephone numbers**
CHEMTREC (24/24 – 7/7)
International: +1 703 741 5970
From United Kingdom (London): 0870 820 0418 / 02038073798
Other countries: see section 16

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008:**


GHS02 flame

Flam. Liq. 3 H226 Flammable liquid and vapour.


GHS08 health hazard

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.


GHS09 environment

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.


GHS07 exclamation mark

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.

· **Information concerning particular hazards for human and environment:**
Effects on human health:
if swallowed accidentally, the product may enter the lungs due to its low viscosity and lead to the rapid development of very serious pulmonary lesions (medical survey for 48 hours minimum).

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008:**
The substance is classified and labelled according to the CLP regulation.
· **Hazard pictograms:**

GHS02 GHS07 GHS08 GHS09

· **Signal word:** Danger
· **Hazard statements:**
H226 Flammable liquid and vapour.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H304 May be fatal if swallowed and enters airways.
H410 Very toxic to aquatic life with long lasting effects.
· **Precautionary statements:**

P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331	Do NOT induce vomiting.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P501	Dispose of contents and container in accordance with local/regional/national/international regulations.

· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:**
Hydrocarbons, terpene processing by-products
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
Turpentine oil from pulping processes
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
Terpineol multiconstituent
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
· **vPvB:**
Hydrocarbons, terpene processing by-products
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.
Turpentine oil from pulping processes
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.
Terpineol multiconstituent
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.

SECTION 3: Composition/information on ingredients

· **3.1 Chemical characterization: Substance**
According to REACH identification rules, this product is a multiconstituent substance, consisting of the following main constituents (> 10%):
- hydrocarbons, terpene processing by-products - CAS 68956-56-9
- turpentine oil from pulping processes - CAS 8006-64-2
- terpineol multiconstituent - CE 701-188-3
Components present at less than 10% are considered as impurities on REACH.
· **Identification number(s)**
· **EC number:** 273-309-3 / 232-350-7 / 701-188-3
· **Description:**
Reaction mass of hydrocarbons, terpene processing by-products (CAS 68956-56-9), turpentine oil from pulping processes (CAS 8006-64-2) and terpineol multiconstituent (CE 701-188-3)
· **Additional information:**
REACH status:
Hydrocarbons, terpene processing by-products
Distillation fraction obtained from terpene processing, mainly composed of hydrocarbons (terpinolene, camphene, alpha-terpinene, alpha-pinene, dipentene, gamma-terpinene, paracymene, isoterpinolene,...) ; cineoles (1,4-cineole and 1,8-cineole) and terpene alcohols (alpha-terpineol, gamma-terpineol,...) are also present.
CAS No.: 68956-56-9
EC No.: 273-309-3
REACH Registration No.: 01-2119980606-28-0000
Turpentine oil from pulping processes
CAS No.: 8006-64-2
EC No.: 232-350-7
REACH Registration No.: 01-2119502456-45-0020
Terpineol multiconstituent
Substance name according to REACH identification requirements: reaction mass of α,α,4-trimethyl-, (1S)-, 3-cyclohexene-1-methanol and α,α,4-trimethyl-, (1R)-, 3-cyclohexene-1-methanol and 1-methyl-4-(1-methylethylidene)-cyclohexanol
Common CAS No.: 8000-41-7
EC No.: 701-188-3
REACH Registration No.: 01-2119553062-49-0000

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **After inhalation:**
Supply fresh air. If symptoms are experienced, get medical attention.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
Immediately rinse with plenty of water.
Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Get medical attention if irritation or skin rash occurs.
· **After eye contact:**
Immediately rinse with plenty of water. Remove contact lenses, if present and easy to do. Hold eyelids apart and flush eyes with plenty of cool low-pressure water for 15 minutes. Consult an ophthalmologist.
· **After swallowing:**
Do NOT induce vomiting.
If the person is conscious, rinse out mouth with water.
Call for a doctor immediately.
· **4.2 Most important symptoms and effects, both acute and delayed** Pulmonary effects if swallowed accidentally.
· **4.3 Indication of any immediate medical attention and special treatment needed**
If swallowed accidentally, medical survey for 48 hours minimum.

SECTION 5: Firefighting measures

· **5.1 Suitable extinguishing agents**
Foam
Fire-extinguishing powder
Carbon dioxide (CO_2)
· **5.2 Special hazards arising from the substance or mixture** In case of fire, may release irritant and toxic fumes.
· **5.3 Advice for firefighters**
· **Protective equipment:**
Firefighters should wear appropriate protective equipment and self-contained breathing apparatus.
· **Additional information:** Cool endangered receptacles with water spray.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear appropriate personal protective equipment. Keep unprotected persons away.
Provide adequate ventilation.
Keep away from sources of ignition.
· **6.2 Environmental precautions**
Do not allow product to reach soil, waterways, drains and sewers.
Inform the relevant authorities if the product has caused environmental pollution (soil, waterways, drains or sewers).
· **6.3 Methods and material for containment and cleaning up**
Small spills:
Absorb spilled liquid with inert absorbent. Collect in an appropriate container properly labelled. Close it for disposal.
Large spills:
Stop spill if it can be done without danger. Dike. Pump as much liquid as possible with an explosion-proof pump or a hand pump. Absorb the remaining liquid with inert absorbent. Collect in an appropriate container properly labelled. Close it for disposal. Use only non-sparking tools.
· **6.4 Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Wear appropriate personal protective equipment. Provide adequate ventilation in the workplace.
· **Information about fire - and explosion protection:**
Protect against electrostatic charges.
Use only non-sparking tools.
Keep ignition sources away.
Protect from heat.
· **7.2 Conditions for safe storage**
If possible, store the drums or ecobulk under shelter in a cool and well ventilated place.
Keep container type drums or ecobulk tightly closed.
All equipments including ventilation systems must be equipotential and earthed.
Keep away from sources of ignition.
Protect drums or ecobulk from high heat and direct sunlight.
· **Further information about storage conditions:** Recommendation: stainless steel tank with nitrogen blanketing.
· **Recommended storage temperature:** 30 - 35°C
· **7.3 Specific end use(s)** Only identified uses listed in section 1 are covered by exposure scenarios.

SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**
· **Components with limit values that require monitoring at the workplace:**
turpentine oil from pulping processes (CAS 8006-64-2)
Belgium: limit value - 8 hours = 20 ppm
Denmark and Finland: limit value - 8 hours = 140 mg/m³ (25 ppm)
Denmark and Finland: limit value - short term = 280 mg/m³ (50 ppm)
France: limit value - 8 hours = 560 mg/m³ (100 ppm)
Germany (DFG): limit value - 8 hours = 28 mg/m³ (5 ppm)
Germany (DFG): limit value - short term = 56 mg/m³ (10 ppm)
Hungary: limit value - 8 hours = 560 mg/m³
Hungary: limit value - short term = 560 mg/m³
Ireland: limit value - 8 hours = 112 mg/m³ (20 ppm)
Ireland: limit value - short term = 840 mg/m³ (150 ppm)
Latvia: limit value - 8 hours = 300 mg/m³
Poland: limit value - 8 hours = 112 mg/m³
Poland: limit value - short term = 300 mg/m³
Romania: limit value - 8 hours = 400 mg/m³
Romania: limit value - short term = 500 mg/m³
Spain: limit value - 8 hours = 113 mg/m³ (20 ppm)
Sweden: limit value - 8 hours = 150 mg/m³ (25 ppm)
Sweden: limit value - short term = 300 mg/m³ (50 ppm)
Switzerland: limit value - 8 hours = 112 mg/m³ (20 ppm)
Switzerland: limit value - short term = 224 mg/m³ (40 ppm)
United Kingdom: limit value - 8 hours = 566 mg/m³ (100 ppm)
United Kingdom: limit value - short term = 850 mg/m³ (150 ppm)
terpenes
Austria: limit value - 8 hours = 560 mg/m³ (100 ppm)
Austria: limit value - short term = 560 mg/m³ (100 ppm)
Denmark: limit value - 8 hours = 140 mg/m³ (25 ppm)
Denmark: limit value - short term = 280 mg/m³ (50 ppm)
Sweden: limit value - 8 hours = 150 mg/m³ (25 ppm)
Sweden: limit value - short term = 300 mg/m³ (50 ppm)
Switzerland: limit value - 8 hours = 112 mg/m³ (20 ppm)
Switzerland: limit value - short term = 224 mg/m³ (40 ppm)
alpha-pinene multiconstituent (common CAS 80-56-8)
Belgium: limit value - 8 hours = 20 ppm
Sweden: limit value - 8 hours = 150 mg/m³ (25 ppm)
Sweden: limit value - short term = 300 mg/m³ (50 ppm)
Switzerland: limit value - 8 hours = 112 mg/m³ (20 ppm)
Switzerland: limit value - short term = 224 mg/m³ (40 ppm)
paracymene (CAS 99-87-6)
Belgium: limit value - 8 hours = 100 mg/m³ (20 ppm)
Denmark: limit value - 8 hours = 135 mg/m³ (25 ppm)
Denmark: limit value - short term = 270 mg/m³ (50 ppm)
Sweden: limit value - 8 hours = 140 mg/m³ (25 ppm)
Sweden: limit value - short term = 190 mg/m³ (35 ppm)
dipentene (dl-limonene - CAS 138-86-3)
Sweden: limit value - 8 hours = 150 mg/m³ (25 ppm)
Sweden: limit value - short term = 300 mg/m³ (50 ppm)
d-Limonene (CAS 5989-27-5) - one of the two isomers of dipentene (CAS 138-86-3)
Finland: limit value - 8 hours = 140 mg/m³ (25 ppm)
Finland: limit value - short term = 280 mg/m³ (50 ppm)
Germany (AGS): limit value - 8 hours = 28 mg/m³ (5 ppm)
Germany (AGS): limit value - short term = 110 mg/m³ (20 ppm)
Germany (DFG): limit value - 8 hours = 28 mg/m³ (5 ppm)
Germany (DFG): limit value - short term = 112 mg/m³ (20 ppm)
Switzerland: limit value - 8 hours = 40 mg/m³ (7 ppm)
Switzerland: limit value - short term = 80 mg/m³ (14 ppm)

· **DNELs**

· **DNEL (Derived No-Effect Level): Workers - Acute / short-term exposure**
Turpentine oil from pulping processes (CAS 8006-64-2)
- Sulfur compounds
Systemic effects - inhalation: 51.6 mg/m³
Systemic effects - dermal: 1.6 mg/kg body weight/day
Local effects - inhalation: 10.3 mg/m³
- Pinenes
Systemic effects - inhalation: 67.2 mg/m³
Systemic effects - dermal: 9.51 mg/kg body weight/day
Local effects - inhalation: 133.6 mg/m³
Local effects - dermal: 9.51 mg/m³

· **DNEL (Derived No-Effect Level): Workers - Long-term exposure**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
Systemic effects - inhalation: 2.9 mg/m³
Systemic effects - dermal: 0.8 mg/kg body weight/day
Turpentine oil from pulping processes (CAS 8006-64-2)
- Sulfur compounds
Systemic effects - inhalation: 0.78 mg/m³
Systemic effects - dermal: 1.6 mg/kg body weight/day
Local effects - inhalation: 3.9 mg/m³
- Pinenes
Systemic effects - inhalation: 22.4 mg/m³
Systemic effects - dermal: 3.17 mg/kg body weight/day
Local effects - inhalation: 44.6 mg/m³
Local effects - dermal: 3.17 mg/m³
Terpineol multiconstituent (EC 701-188-3)
Systemic effects - inhalation: 44.8 mg/m³
Systemic effects - dermal: 6.36 mg/kg body weight/day

· **DNEL (Derived No-Effect Level): General population - Long-term exposure**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
Systemic effects - inhalation: 0.7 mg/m³
Systemic effects - dermal: 0.3 mg/kg body weight/day
Systemic effects - oral: 0.3 mg/kg body weight/day
Terpineol multiconstituent (EC 701-188-3)
Systemic effects - inhalation: 7.96 mg/m³
Systemic effects - dermal: 2.69 mg/kg body weight/day
Systemic effects - oral: 2.69 mg/kg body weight/day

· **PNECs**
Turpentine oil from pulping processes (CAS 8006-64-2)
As the product is a UVCB (Substance is of Unknown or Variable composition, Complex reaction product or Biological origin) 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.
Aquatic freshwater PNECs (mg/L)
Block 1: 0.013
Block 2: 0.0066
Block 3: 0.0044
Block 4: 2
Block 5: 1.8
Block 6: 0.00037
Block 7: 0.08
Block 8: 0.011
Block 9: 0.0059

· **PNEC (Predicted No-Effect Concentration) aqua (freshwater):**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 2.1 µg/L
Terpineol multiconstituent (EC 701-188-3) 12 µg/L

· **PNEC (Predicted No-Effect Concentration) aqua (marine water):**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 0.21 µg/L
Terpineol multiconstituent (EC 701-188-3) 1.2 µg/L
· **PNEC (Predicted No-Effect Concentration) Sewage Treatment Plant:**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 6.4 mg/L
Terpineol multiconstituent (EC 701-188-3) 2.57 mg/L
· **PNEC (Predicted No-Effect Concentration) sediment (freshwater):**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 0.542 mg/kg sediment dry weight
Terpineol multiconstituent (EC 701-188-3) 0.263 mg/kg sediment dry weight
· **PNEC (Predicted No-Effect Concentration) sediment (marine water):**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 54.2 µg/kg sediment dry weight
Terpineol multiconstituent (EC 701-188-3) 0.0263 mg/kg sediment dry weight
· **PNEC (Predicted No-Effect Concentration) soil:**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 110 µg/kg soil dry weight
Terpineol multiconstituent (EC 701-188-3) 0.0455 mg/kg soil dry weight
· **PNEC (Predicted No-Effect Concentration) oral:**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 13.1 mg/kg food
Terpineol multiconstituent (EC 701-188-3) 16.6 mg/kg food
· **PNEC (Predicted No-Effect Concentration) aqua (intermittent releases):**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9) 21 µg/L
Terpineol multiconstituent (EC 701-188-3) 120 µg/L

· **Additional information:**
This sheet is based on the current valid lists for occupational exposure limit values at the time of its preparation. The DNELs and PNECs values are derived from the chemical safety assessment conducted for REACH.
Occupational exposure limits and DNELs are health-based but they are not necessarily set in the same way. The primary duty is to comply with risk management measures which enable to limit exposures as much as possible and to be in line with exposure reference levels.

· **8.2 Exposure controls**
· **General protective and hygienic measures:**
The usual precautionary measures are to be adhered to when handling chemicals. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Immediately remove all soiled and contaminated clothing.
Avoid contact with eyes and skin.
· **Personal protective equipment**
· **Respiratory protection:**
If ventilation is insufficient, use a breathing apparatus (filtering device with type A cartridge or insulating device with a source of fresh air independent of the ambient air).
· **Hand protection:**
Protective gloves resistant to chemicals (standard EN 374-1). They should be replaced regularly and if there is any indication of degradation.
· **Eye protection:**
Safety glasses (standard EN 166).
For qualifiying operations with increased risk (eg: connection/disconnection of hoses, purges, sampling, etc.) wear safety glasses (standard EN 166) AND a face shield.
· **Body protection:** Protective work clothing.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Liquid
Colour:	Brown
· **Odour:**	Sulphur smell
· **Odour threshold:**	Not determined
· **pH value:**	Not applicable
· **Change in condition**	
Melting/freezing point:	Not determined
Initial boiling point or boiling range:	Not determined

· **Flash point:**	35 - 60°C (closed cup)
· **Auto-ignition temperature:**	Not determined
· **Decomposition temperature:**	Not determined
· **Explosive properties:**	The components of the substance do not contain any chemical groups associated with explosive properties
· **Oxidising properties:**	The components of the substance do not contain any chemical groups associated with explosive properties
· **Vapour pressure:**	Not determined
· **Density** **Relative density:** **Vapour density:**	 0.90 - 0.92 (20°C) Not determined
· **Evaporation rate:**	Not determined
· **Solubility(ies)** **in water:**	 Not soluble or slightly soluble
· **Partition coefficient: n-octanol/water:**	Not determined
· **Viscosity** **Dynamic:**	 3 - 280 mPa.s (20°C)
· **9.2 Other information**	No other data

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No data from specific reactivity tests are available for this product or this class of product.
· **10.2 Chemical stability**
Product stable under storage and handling conditions according to specifications (see section 7).
· **10.3 Possibility of hazardous reactions**
No hazardous reactions known except those with incompatible products listed in point 10.5.
· **10.4 Conditions to avoid** Keep away from any flame or source of sparks.
· **10.5 Incompatible materials**
Strong acids
Strong bases
Strong oxidising agents
· **10.6 Hazardous decomposition products** No dangerous decomposition products known.

SECTION 11: Toxicological information

· **11.1 Information on toxicological effects**
· **Acute toxicity** Based on available data, the classification criteria are not met.
· **LD_{50}/LC_{50} values relevant for classification:**
The substance do not induce any signs of acute toxicity at concentrations used for classification.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
LD_{50} (oral, rat): > 2 000 mg/kg (OECD 401 Guideline)
LD_{50} (dermal, rat): > 2 000 mg/kg (OECD 402 Guideline)
Turpentine oil from pulping processes (CAS 8006-64-2)
LD_{50} (oral, rat): 4.6 mL/kg (equivalent to ca. 4 000 mg/kg)
LD_{50} (dermal, rabbit): > 2 000 mg/kg
LC_{50} (inhalation, 4 h, rat): 13.7 mg/L
Terpineol multiconstituent (EC 701-188-3)
LD_{50} (oral, rat): > 2 000 mg/kg (OECD 401 Guideline)
LD_{50} (dermal, rabbit): > 2 000 mg/kg (OECD 402 Guideline)
LC_{50} (inhalation, 4 h, rat): > 4.76 mg/L (OECD 403 Guideline)
Note: no acute toxicity (either local or systemic) was identified at the highest dose tested by inhalation (4.76 mg/L). Oral and dermal LD_{50} are higher than 2 000 mg/kg. Therefore, no signs of acute toxicity are expected by inhalation at concentrations used for classification.

· **Skin corrosion/irritation:**
The substance is classified as skin irritant (category 2).
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
This substance was found skin irritant (category 2) in a study conducted on rabbits according to a method equivalent to OECD 404 Guideline.
Turpentine oil from pulping processes (CAS 8006-64-2)
Recent, reliable in vitro skin irritation studies (EpiSkin - ECVAM protocol) are available for three of the major constituents of the substance : alpha-pinene, beta-pinene and delta-3-carene. These three substances are irritating to skin.
Terpineol multiconstituent (EC 701-188-3)
Terpineol multiconstituent and alpha-terpineol (main constituent) were found to be skin irritating (category 2), in several studies conducted on rabbits according to OECD 404 Guideline.

· **Serious eye damage/irritation:**
The substance is classified as eye irritant (category 2).
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
This substance is classified as an eye irritant (category 2) based on available data on one of its constituents (camphene) and on another substance containing common constituents (1,4-cineole, 1,8-cineole and dipentene).
Turpentine oil from pulping processes (CAS 8006-64-2)
The substance is irritating to the eyes.
Terpineol multiconstituent (EC 701-188-3)
This substance was found to be eye irritating (category 2), in a study conducted on rabbits according to OECD 405 Guideline.

· **Skin sensitisation:**
The substance is classified due to the presence of hydrocarbons, terpene processing by-products.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
This substance is classified as a skin sensitiser (category 1B) based on available data on one of its constituents and on another substance containing common constituents: terpinolene and a substance containing terpinolene, 1,4-cineole, 1,8-cineole and dipentene were found skin sensitisers in the murine Local Lymph Node Assay (LLNA - OECD 429 Guideline).
Turpentine oil from pulping processes (CAS 8006-64-2)
The substance is a skin sensitiser.
In vivo studies have showed that beta-pinene, delta-3-carene and gum turpentine oil (whose main constituents are alpha-pinene and beta-pinene) may induce a skin sensitisation. Furthermore, gum turpentine oil is also known for its human properties as a skin sensitiser.

· **Mutagenicity/genotoxicity:**
The substance did not show any genotoxic potential.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
Results of tests conducted with this substance showed that it has no genotoxic potential:
- no mutagenic effects were observed in bacteria in an Ames test (OECD 471 Guideline);
- no mutagenic effects were observed in a gene mutation test in mouse lymphoma L5178Y cells (OECD 476 Guideline);
- no genotoxic effects were observed in a chromosome aberration test in human lymphocytes (OECD 473 Guideline), except after exposing cells for 20 hours without metabolic activation. The toxicological significance of this observation was considered questionable. Therefore, an in vitro micronucleus test (OECD 487 Guideline) was performed under similar experimental conditions (20h-exposure without metabolic activation, human lymphocytes). No biologically relevant increases in micronuclei were observed.

Turpentine oil from pulping processes (CAS 8006-64-2)
Results of tests conducted with the substance show that it has no genotoxic potential:
- no mutagenic effects were observed in an Ames test (OECD 471 Guideline);
- no genotoxic effects were observed with the substance in an in vitro chromosome aberration test in human lymphocytes (OECD 473 Guideline);
- no mutagenic effects were observed in an in vitro gene mutation test in mouse lymphoma L5178Y cells (OECD 476 Guideline).

Terpineol multiconstituent (EC 701-188-3)
Based on the results of the tests conducted with this substance and one of its main constituents, no genotoxic potential is expected:
- terpineol multiconstituent and alpha-terpineol were not mutagenic in several Ames tests (OECD 471 Guideline);
- no genotoxic effects were observed with this substance in an in vitro chromosome aberration test in human lymphocytes (OECD 473 Guideline);
- alpha-terpineol was not mutagenic in a gene mutation test on mouse lymphoma L5178Y cells (OECD 476 Guideline).

· **Carcinogenicity:**
This substance is not expected to be carcinogenic.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
This substance is not expected to be carcinogenic: no mutagenic effects were observed with the substance itself and a repeated dose toxicity study conducted on rats with another substance containing terpinolene, 1,4-cineole, 1,8-cineole and dipentene, did not demonstrate any hyperplasia signs or pre-neoplastic lesions.
Turpentine oil from pulping processes (CAS 8006-64-2)
No data available.
Terpineol multiconstituent (EC 701-188-3)
The substance is not expected to be carcinogenic: no mutagenic effects were observed with the substance and there is no evidence from the repeated dose toxicity studies that terpineol multiconstituent is able to induce hyperplasia or pre-neoplastic lesions.

· **Reproductive toxicity:**
No toxic effects for reproduction are expected from this substance.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
Data are available on two constituents of the substance (alpha-pinene and camphene) and on another substance containing common constituents (terpinolene, 1,4-cineole, 1,8-cineole and dipentene). Based on this information, no toxic effects for reproduction are expected from substance hydrocarbons, terpene processing by-products:
1) a substance containing terpinolene, 1,4-cineole, 1,8-cineole and dipentene was tested in an oral combined repeated dose and reproduction/developmental screening test conducted on rats according to OECD Guideline No 422. No effects were observed on reproductive performance, gestation parameters, pup survival and development.
NOAEL (No Observed Adverse Effect Level) - systemic toxicity for males and females (P) = 435.8 mg/kg body weight/day (higher dose tested)
NOAEL - reproduction and developmental toxicity = 435.8 mg/kg body weight/day (higher dose tested)
2) no effects were observed on reproductive organs in 90-day inhalation repeated toxicity studies conducted with alpha-pinene on rats and mice;
3) no effects on development were observed at maternal non-toxic doses in an oral study conducted on rats with camphene (study conducted according to OECD 414 Guideline).
Turpentine oil from pulping processes (CAS 8006-64-2)
The substance is not considered as a reproductive toxicant.
No reproductive toxicity studies are available for the substance. No teratogenic effects were reported in developmental toxicity studies on minor constituent of the substance (dimethyl disulphide) and on products similar to major components.
Terpineol multiconstituent (EC 701-188-3)
Based on findings from three studies conducted on rats with this substance, there is strong evidence that no reproductive effects are likely to occur by the possible routes of human exposure.
A prenatal developmental toxicity study was conducted according to OECD 414 Guideline. Administration of the substance by gavage to pregnant female rats at doses up to 600 mg/kg body weight/day did not induce effects considered as adverse on pup survival and development.
NOAEL (maternal toxicity) = 600 mg/kg body weight/day
NOAEL (enbryo-foetal toxicity) = 600 mg/kg body weight/day
A prenatal developmental toxicity study was conducted according to OECD Guideline 414. Administration of the substance by gavage to pregnant female rabbits at doses up to 500 mg/kg body weight/day did not induce effects considered as adverse on pup survival and development.
NOAEL (maternal toxicity) = 500 mg/kg body weight/day
NOAEL (enbryo-foetal toxicity) = 500 mg/kg body weight/day
No effects were observed on the reproductive organs in two 90-day repeated toxicity studies conducted on rat: by inhalation according to OECD guideline No. 413 and by oral route.

· **Specific target organ toxicity - single exposure:**
No specific target organ toxicity leading to classification was observed in the LD_{50} determination studies.

· **Specific target organ toxicity - repeated exposure:**
Available data on the components of the substance do not lead to any classification.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
Data are available on two constituents of the substance (alpha-pinene and camphene) and on another substance containing common constituents (terpinolene, 1,4-cineole, 1,8-cineole and dipentene). Based on this information, no classification is needed for the substance:

1) a combined repeated dose and reproduction/developmental screening test was conducted on rat according to OECD 422 Guideline with a substance containing terpinolene, 1,4-cineole, 1,8-cineole and dipentene. Daily administration of the substance by diet for 42 days, at dose levels up to 435.8 mg/kg body weight/day, was generally well tolerated . Effects only considered as adaptative or specific for male rats were observed.
NOAEL = 435.8 mg/kg body weight/day (maximal tested dose)
2) a 90-day repeated dose toxicity study was conducted by inhalation with alpha-pinene.
NOAEC (mice): 283.24 mg/m³ - based on moderated hyperplasia of the transitional epithelium of the urinary bladder.
3) a 28-day repeated dose toxicity study was conducted on rats according to OECD 407 Guideline with camphene. Daily administration of the substance by gavage at dose levels up to 1 000 mg/kg body weight/day was generally well tolerated.
NOAEL = 250 mg/kg body weight/day - based on increased liver weight (absolute and relative)
Turpentine oil from pulping processes (CAS 8006-64-2)
A 90-day inhalation study was carried out for two constituents of the substance, dimethyl disulfide and alpha-pinene.
NOAEC alpha-pinene (mice): 283.24 mg/m³ - target organ: urinary bladder
NOAEC dimethyl disulphide (rat): 38.5 mg/m³ - target organ: respiratory tract
Terpineol multiconstituent (EC 701-188-3)
Available data presented below do not lead to any classification of this substance.
In a repeated dose toxicity study, daily administration of terpineol multiconstituent by gavage for 5 weeks to male and female rats was generally well tolerated at dose levels up to 750 mg/kg body weight/day.
NOAEL = 250 mg/kg (testicles)
There is strong evidence that no effects will occur when animals are exposed through a route relevant for human exposure (diet) rather than gavage.
A 90-day repeated dose toxicity study was carried out by inhalation in rat, according to OECD guideline No. 413. Administration of the substance to male and unmated female rats, at dose levels up to 2.23 mg/L, was well tolerated and no effects were observed on the reproductive organes.
NOAEL = 2.23 mg/L

· **Aspiration hazard:** If swallowed accidentally, the product may enter the respiratory tract due to its low viscosity.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):**
According to Regulation (EC) No 1272/2008, the substance is not considered to be CMR.

SECTION 12: Ecological information

· **12.1 Aquatic toxicity**
The substance is classified toxic to aquatic life with long lasting effects (category chronic 2) due to the presence of hydrocarbons, terpene processing by-products and turpentine oil from pulping processes.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
Reliable short-term aquatic toxicity values have been determined in tests conducted with water-accommodated fractions (WAFs). This method was developped for slightly soluble substances; the initial loading rate of the substance is well higher than the solubility in water. LL_{50} and EL_{50}, similar to LC_{50} and EC_{50}, are obtained.
LL_{50} (96 h), fish (Danio rerio): 5.07 mg/L (nominal concentration - OECD 203 Guideline)
EL_{50} (48 h), daphnia (Daphnia magna): 2.10 - 2.70 mg/L (nominal concentration - OECD 202 Guideline - two batches tested)
EL_{50} (72 h), algae (Pseudokirchnerella subcapitata): 4.78 mg/L (based on growth rate - nominal concentration - OECD 201 Guideline)
EL_{50} (72 h), algae (Pseudokirchnerella subcapitata): 3.08 mg/L (based on yield - nominal concentration - OECD 201 Guideline)
These results lead to classify the substance for its toxicity to aquatic life (hazard to the aquatic environment - category 2).
Turpentine oil from pulping processes (CAS 8006-64-2)
TOPP with sulphur content of 0.02%:
LL_{50} (96h), fish (Danio rerio): 29 mg/L
NOELr, fish (Danio rerio): 5 mg/L
EL_{50} (48h), daphnia (Daphnia magna): 8.8 mg/L
NOELr, daphnia (Daphnia magna): 2.5 mg/L
EL_{50} (72h), algae (Desmodesmus subspicatus): 17.1 mg/L
NOELr, algae (Desmodesmus subspicatus): 10 mg/L
TOPP with sulphur content of 3.6%.
LL_{50} (96h), fish (Danio rerio): 45.1 mg/L

NOELr, fish (Danio rerio): 5 mg/L
EL_{50} (48h), daphnia (Daphnia magna): 6.4 mg/L
NOELr, daphnia (Daphnia magna): 2.5 mg/L
EL_{50} (72h), algae (Desmodesmus subspicatus): 22.5 mg/L
NOELr, algae (Desmodesmus subspicatus): 5 mg/L

· **Toxicity to aquatic microorganisms:**
Sewage containing the substance can be treated by a municipal sewage treatment plant (taking into account the PNEC STEP given in section 8).
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
EC_{50} (3 h), bacteria (activated sludge of a predominantly domestic sewage): 365 and 579 mg/L (respiration rate - nominal concentration - two batches tested - OECD 209)
Turpentine oil from pulping processes (CAS 8006-64-2)
No data available.
Terpineol multiconstituent (EC 701-188-3)
No toxic effects were observed with this substance on activated sludge of a domestic sewage, in a ready biodegradability study.

· **Terrestrial toxicity:**
Only data on terpineol multiconstituent are available.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
No data available.
Turpentine oil from pulping processes (CAS 8006-64-2)
No data available.
Terpineol multiconstituent (EC 701-188-3)
LC_{50} (14 days), earthworm (Eisenia fetida): 499 - 799 mg/kg soil dry weight (based on mortality - nominal concentration - OECD 207 Guideline)
NOEC (14 days), earthworm (Eisenia fetida): 311 mg/kg soil dry weight (based on mortality - nominal concentration - OECD 207 Guideline)
NOEC (14 days), earthworm (Eisenia fetida): 311 mg/kg soil dry weight (based on growth - nominal concentration - OECD 207 Guideline)

· **12.2 Persistence and degradability**
The substance is readily biodegradable.
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
This substance is readily biodegradable.
Degradation after 28 days: 81 - 83% (oxygen consumption - OECD 301 D Guideline - activated sludge of a domestic sewage, non-adapted).
Turpentine oil from pulping processes (CAS 8006-64-2)
Abiotic degradation:
None of the constituents of the substance 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.
Biodegradation:
Biodegradation of 72% (measure of oxygen consumption) was achieved in 28 days using a method consistent with OECD Guideline 301 F. The '10-day window' criterion was, however, not met. However, it cannot be stated with complete certainty that it does not contain non-readily-biodegradable constituents.
Five supporting studies (OECD 301 D, 28 d) on individual constituents (beta-pinene, delta-3-carene, dipentene, myrcene and terpinolene respectively) confirmed the ready biodegradable test results (72-81 % degradation of test substance).
Terpineol multiconstituent (EC 701-188-3)
Terpineol multiconstituent is readily biodegradable.
Degradation after 28 days: 80% (inorganic carbon concentration - OECD 310 Guideline - activated sludge from a domestic waste water treatment plant, not adapted, 60% being surpassed within 10 days after reaching 10%).

· **12.3 Bioaccumulative potential**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
No measured data are available for the individual constituents of the substance. Based on partition coefficients n-octanol/water determined for the main constituents, an accumulation in organisms is not expected.
Turpentine oil from pulping processes (CAS 8006-64-2)
None of the constituents meet the bioaccumulation criteria.
Terpineol multiconstituent (EC 701-188-3)
No measured data are available. Based on estimations using 3 different QSARs (Quantitative Structure-Activity Relationship methods) and the value of the partition coefficient n-octanol/water less than 3, an accumulation in organisms is not expected.
· **12.4 Mobility in soil**
Hydrocarbons, terpene processing by-products (CAS 68956-56-9)
No data available.
Turpentine oil from pulping processes (CAS 8006-64-2)
The adsorption/desorption of the substance was calculated for the different blocks of constituents of the substance described in section 16 (model QSAR: KOCWIN).
The highest individual Koc was calculated for block 6 (Sesquiterpenes): Koc = 240 000.
Terpineol multiconstituent (EC 701-188-3)
28.8 ≤ Koc ≤ 50.9 (OECD 106)
· **12.5 Results of PBT and vPvB assessment**
· **PBT:**
Hydrocarbons, terpene processing by-products
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
Turpentine oil from pulping processes
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
Terpineol multiconstituent
According to Annex XIII of REACH Regulation, the substance is not considered to be Persistent, Bioaccumulative and Toxic.
· **vPvB:**
Hydrocarbons, terpene processing by-products
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.
Turpentine oil from pulping processes
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.
Terpineol multiconstituent
According to Annex XIII of REACH Regulation, the substance is not considered to be very Persistent and very Bioaccumulative.
· **12.6 Other adverse effects** No data available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods** National and regional regulations have to be adhered to.
· **Recommendation:** The product has to be disposed of in an authorised incinerator, according to regulation.
· **Uncleaned packaging**
· **Recommendation:** Packaging has to be sent to an authorised waste treatment facility, for recycling or disposal.

SECTION 14: Transport information

· **14.1 UN Number**	
· **ADR, IMDG, IATA**	UN 1993
· **14.2 UN proper shipping name**	
· **ADR**	1993 FLAMMABLE LIQUID, N.O.S. (hydrocarbons, terpene processing by-products, crude sulfate turpentine), ENVIRONMENTALLY HAZARDOUS
· **IMDG**	FLAMMABLE LIQUID, N.O.S. (hydrocarbons, terpene processing by-products, crude sulfate turpentine), MARINE POLLUTANT
· **IATA**	FLAMMABLE LIQUID, N.O.S. (hydrocarbons, terpene processing by-products, crude sulfate turpentine)
· **14.3 Transport hazard class(es)**	
· **ADR**	
· **Class**	3 Flammable liquids
· **Label**	3
· **IMDG, IATA**	
· **Class**	3 Flammable liquids
· **Label**	3
· **14.4 Packing group**	
· **ADR, IMDG, IATA**	III
· **14.5 Environmental hazards**	Environmentally hazardous substance, liquid; Marine Pollutant
· **Marine pollutant:**	Symbol (fish and tree)
· **Special marking (ADR):**	Symbol (fish and tree)
· **14.6 Special precautions for user**	Warning: Flammable liquids
· **Danger code:**	30
· **EMS Number:**	F-E,S-E
· **14.7 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code**	Substance listed in the IBC code (International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk): turpentine Pollution category: X, ship type: 2
· **Transport/Additional information:**	
· **ADR**	
· **Tunnel restriction code**	D/E
· **Classification code (letter/figure)**	F1
· **UN "Model Regulation"**	UN 1993, FLAMMABLE LIQUID, N.O.S. (hydrocarbons, terpene processing by-products, crude sulfate turpentine), ENVIRONMENTALLY HAZARDOUS, 3, III

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
Regulation (EC) No 1907/2006 (REACH):
The product does not contain any of the substances included in the following lists
- Annex XIV (authorisation) / substances of very high concern (SVHC)
- Annex XVII (restrictions)
Directive 2012/18/EU:
Product fulfilling the criteria of hazard categories:
- P5c "Flammable liquids, category 3 (H226)",
- E1 "Hazardous to the aquatic environment in category chronic 1 (H410)".

· **15.2 Chemical safety assessment** A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

Information provided in this safety data sheet is based on our experience and present knowledge. It is a description of safety requirements and data given on the product and cannot be considered as specifications. They shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Emergency telephone numbers (other countries):**
CHEMTREC In-Country Numbers (24/24 - 7/7)
Argentina (Buenos Aires)*: +54-11 5983 9431
Australia (Sydney)*: +61-2 9037 2994
Austria (Vienna)* : +43-13649237
Belgium (Brussels)*: +32-2 808 32 37
Brazil (Rio de Janeiro)*: +55-2139581449
Brazil (Sao Paulo)*: +55-1143491359
Brazil: 0800 892 0479
Bulgaria (Plovdiv)*: +359-32570104
Canada: 1 800 424 9300
Canada*: 703-741-5970
Cayman Islands*: +345-749-8392
Chile (Santiago)*: +56-2 2581 4934
China*: + 4001-204 937
Colombia*: 01800-710-2151
Costa Rica*: +506-40003869
Croatia (Zagreb)*: +385-17776920
Czech Republic (Prague)*: +420-228880039
Denmark*: +45-69918573
Dominican Republic (Santo Domingo)*: 1 (829) 956-7588
El Salvador (San Salvador)*: +503 2136 7633
Estonia*: +372-6681294
Finland (Helsinki)*: +358-942419014
France*: +33-975181407
Germany: 0800-181-7059
Germany (Frankfurt)*: +49-69643508409
Greece (Athens)*: +30-2111768478
Grenada (Saint George)*: 1 (473) 230-0165
Guinea*: +224 660 71 03 00
Hong Kong: 800-968-793
Hungary (Budapest)*: +36-18088425
Iceland (Reykjavik)*: +354-539 0655
India: 000-800-100-7141
Indonesia: 001-803-017-9114
Ireland (Dublin)*: +353-19014670
Israel (Tel Aviv)*: +972-37630639

Italy: 800-789-767
Italy (Milan)*: +39-0245557031
Japan (Tokyo)*: +81-345209637
Latvia (Riga)*: +371-66165504
Lithuania (Vilnius)*: +370-52140238
Luxembourg*: +352-20202416
Macedonia (Skopje)*: +389-2 551 7456
Malaysia (Kuala Lumpur)*: +60-392125794
Malaysia: 1-800-815-308
Mexico: 01-800-681-9531
Netherlands*: +31-858880596
NewZealand (Auckland)*: +64-98010034
Nigeria (Lagos)*: +234 1 227 8883
Panama*: +507-8322475
Peru (Lima)*: +51-17071295
Philippines: 1-800-1-116-1020
Philippines (Manila)*: +63 2 8395 3308
Poland (Warsaw): +48-223988029
Portugal*: +351-308801773
Romania*: +40-37-6300026
Russia: 8-800-100-6346
Saudi Arabia (mobil services): +966-8111095861
Singapore: 800-101-2201
Singapore*: +65-31581349
Slovakia (Bratislva)*: +421-233057972
Slovenia (Ljubjana)*: +386-18888016
South Africa: 0-800-983-611
South Korea: 003-0813-2549
South Korea: 080-822-1374
Spain: 900-868538
Spain (Barcelona)*: +34-931768545
Sweden (Stockholm)*: +46-852503403
Switzerland (Zurich)*: +41-435082011
Taiwan: 00801-148954
Taiwan (Taipei)*: +888-2-7741-4207
Thailand: 001-800-13-203-9987
Trinidad and Tobago*: +1-868-224-5716
Turkey (Istanbul)*: +90-212-7055340
Ukraine (mobil services): +380-947101374
United Kingdom (London)*: +44-870-8200418 / +44-2038073798
USA: 1 800 424 9300
USA*: 703-741-5970
(*) Phone numbers for countries marked with an asterisk must be dialed within the country.

· **Full text of H and EUH mentions indicated in sections 2 and 3:**
H226: Flammable liquid and vapour

H304: May be fatal if swallowed and enters airways
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H319: Causes serious eye irritation
H410: Very toxic to aquatic life with long lasting effects

· **Abbreviations and acronyms:**
CLP: Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging
LD_{50}: Lethal dose for 50% of animals exposed by oral or dermal route
LC_{50}: Lethal concentration for 50% of exposed animals
EC_{50}: Concentration which leads to a 50% reduction in treated organism responses compared to untreated organism responses (algae) or concentration which causes effects to 50% of the tested organisms (daphnids)
EL_{50}: Loading rate which causes effects to 50% of the tested organisms (daphnids)
LL_{50}: Median lethal loading rate (lethal level for 50% of fish exposed)
NOAEL: No Observed Adverse Effect Level
NOAEC: No Observed Adverse Effect Concentration
NOEC: No Observed Effect Concentration
NOELr: Initial loading rate of the substance without observed effect
LLNA: Local Lymph Node Assay
ECVAM: European Centre for the Validation of Alternative Methods
OECD: Guidelines from the Organisation for Economic Co-operation and Development
PBT: Persistent, Bioaccumulative and Toxic substance
vPvB: very Persistent and very Bioaccumulative substance
Koc: Organic carbon/water partition coefficient. It represents the potential of retention of the substance on soil organic matter
SVHC: Substances of Very High Concern
Flam. Liq. 3: Flammable liquids, Category 3
Skin Irrit. 2: Skin corrosion/irritation, Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Skin Sens. 1: Skin sensitisation, Category 1
Asp. Tox. 1: Aspiration hazard, Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

· **Sources:**
REACH dossier data
Literature and company data