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

1.1 Product identifier

Trade name : RHODIANTAL CANDALUM

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

Uses of the Substance/Mixture : Specific use(s): Perfumes, fragrances

1.3 Details of the supplier of the safety data sheet

Company : Solvay (Zhenjiang) Chemical Co., Ltd.
No. 66, Song Lin Shan Road, Zhenjiang New Area, Zhenjiang, Jiangsu, China 212006.
Tel.: +86 511 8530 5277
Fax : +86 511 8530 5378

E-mail address : information.fds@solvay.com

1.4 Emergency telephone number

MULTI LINGUAL EMERGENCY NUMBER (24/7)
Europe/Latin America/Africa : +44 1235 239 670 (UK)
Middle East/Africa speaking Arabic : +44 1235 239 671 (UK)
Asia Pacific : +65 3158 1074 (Singapore)
China : +86 10 5100 3039 (Beijing)
North America : 800 424 9300

China (Domestic Only): +86 532 8388 9090 (Qingdao)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Skin irritation, Category 2	H315: Causes skin irritation.
Acute aquatic toxicity, Category 2	H401: Toxic to aquatic life.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Hazardous products which must be listed on the label:

- Terpenyl Cyclohexanol

Pictogram :



Signal word : Warning

Hazard statements :

H315	Causes skin irritation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements :

General:
None
Prevention:

P273	Avoid release to the environment.
P280	Wear protective gloves.

Response:

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

Storage:
None
Disposal:

P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards which do not result in classification

Slightly irritating to eyes.

SECTION 3: Composition/information on ingredients

3.1 Substance

Formula : C16H28O

Chemical nature : Substance

A complex mixture of trimethylnorbornylcyclohexanol isomers.

Information on Components and Impurities

Chemical Name	CAS-No.	Identification number	GHS Classification	Concentration [%]
Old CAS n° : 68877-29-2				
Terpenyl Cyclohexanol		Not applicable	Skin irritation , Category 2 ; H315 Acute aquatic toxicity , Category 2 ; H401 Chronic aquatic toxicity , Category 2 ; H411	<= 100

For the full text of the H-Statements mentioned in this Section, see Section 16.

3.2 Mixture

Not applicable, this product is a substance.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Show this safety data sheet to the doctor in attendance.
First aider needs to protect himself.
Place affected clothing in a sealed bag for subsequent decontamination.

If inhaled : Move to fresh air.

Skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
Wash immediately and thoroughly for a prolonged period (at least 15 minutes).
Call a physician if irritation develops or persists.

Eye contact : Rinse with running water whilst keeping the eyes wide open (at least 15 minutes)

Ingestion : Do NOT induce vomiting.
Rinse mouth with water.

4.2 Most important symptoms and effects, both acute and delayed

no data available

4.3 Indication of any immediate medical attention and special treatment needed

no data available

SECTION 5: Firefighting measures

Flash point	:	> 100 °C closed cup
Auto-ignition temperature	:	no data available
Flammability/Explosive limit	:	no data available

5.1 Extinguishing media

Suitable extinguishing media	:	Foam Carbon dioxide (CO_2)
Unsuitable extinguishing media	:	High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	Combustible liquid.

5.3 Advice for firefighters

Specific fire fighting methods	:	Cool containers/tanks with water spray.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions, protective equipment and emergency procedures	:	For further information refer to section 8 "Exposure controls/personal protection".

6.2 Environmental precautions

Environmental precautions	:	Prevent product from entering sewage system. Dam up. Do not allow uncontrolled discharge of product into the environment.

6.3 Methods and materials for containment and cleaning up

Recovery	:	Pick up and transfer to properly labelled containers. Keep in suitable, closed containers for disposal.
Decontamination/cleaning	:	Wash the non-recoverable remainder with caustic soda solution (2-5 % NaOH). Wash off with plenty of water.
Disposal	:	Dispose of contents/ container to an approved incineration plant.

6.4 Reference to other sections

no data available

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures	:	Keep in a bunded area.
Advice on safe handling and usage	:	Avoid contact with hot surfaces. Comply with instructions for use.
Hygiene measures	:	Ensure that eyewash stations and safety showers are close to the workstation location. Use clean, well-maintained personal protection equipment.

7.2 Conditions for safe storage, including any incompatibilities

Technical Measures for storage	:	The floor of the depot should be impermeable and designed to form a water-tight basin.

Storage conditions

Recommended	:	To guarantee the quality and properties of the product keep : Protect against light. Keep away from heat and sources of ignition. Keep container tightly closed.
To be avoided	:	Store away from heat.
Incompatible products	:	Strong oxidizing agents

Packaging Measures

Packaging conditions	:	Steel drums varnished with epikote., glass bottles
Packaging materials - Recommended	:	Coated steels., Stainless steel, Tinted glass.

Storage stability

Storage temperature	:	no data available

7.3 Specific end use(s)

no data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Contains no substances with occupational exposure limit values.

We are not aware of any national exposure limit.

8.2 Exposure controls

Control measures

Engineering measures	:	Effective exhaust ventilation system

Personal protective equipment

Respiratory protection	:	Use a respirator with an approved filter if a risk assessment indicates this is necessary.
Hand protection	:	Where there is a risk of contact with hands, use appropriate gloves The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
Eye protection	:	Safety glasses Safety glasses with side-shields
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	:	Ensure that eyewash stations and safety showers are close to the workstation location. Use clean, well-maintained personal protection equipment.
Protective measures	:	Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards and/or risks that may occur during use. The protective equipment must be selected in accordance with current CEN standards and in cooperation with the supplier of the protective equipment.

Environmental exposure controls

General advice	:	Prevent product from entering sewage system. Dam up. Do not allow uncontrolled discharge of product into the environment.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	Form : viscous Physical state: liquid Colour: colourless On heating the product becomes coloured, even in the absence of light. The colour disappears when it cools down, even after exposure to light.
Particle size	:	Not applicable, liquid
Odour	:	of sandalwood
Odour Threshold	:	no data available
pH	:	Not applicable insoluble product
Boiling point/boiling range	:	158 - 162 °C (6.67 hPa)

Flash point	:	> 100 °C closed cup
Evaporation rate (Butylacetate = 1)	:	no data available
Flammability (solid, gas)	:	Will burn
Flammability/Explosive limit	:	no data available
Auto-ignition temperature	:	no data available
Vapour pressure	:	26 hPa (200 °C)
Vapour density	:	9.2
Density	:	Relative density : 0.97 (20 °C)
Solubility	:	Water solubility : practically insoluble Solubility in other solvents: Ethanol : soluble common organic solvents : soluble
Partition coefficient: n-octanol/water	:	log Pow: 5.54 Structure-activity relationship (SAR)
Thermal decomposition	:	no data available
Viscosity	:	Viscosity, dynamic : 2,000 mPa.s (50 °C)
Explosive properties	:	no data available
Oxidizing properties	:	Not considered as oxidizing, Structure-activity relationship (SAR)

9.2 Other information

no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Chemical stability	:	Stable under normal conditions.

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

Conditions to avoid : No dangerous reaction known under conditions of normal use.

10.5 Incompatible materials

Materials to avoid : Reacts with:
Strong oxidizing agents

10.6 Hazardous decomposition products

no data available

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity

Terpenyl Cyclohexanol

LD50 : > 5,000 mg/kg - Rat , male and female
Not classified as hazardous for acute toxicity according to GHS
Information given is based on data obtained from similar substances.
Unpublished internal reports

LD50: > 5,000 mg/kg - Mouse , male and female
Not classified as hazardous for acute toxicity according to GHS
Information given is based on data obtained from similar substances.
Unpublished internal reports

Acute inhalation toxicity : no data available

Acute dermal toxicity

Terpenyl Cyclohexanol : LD50 : > 5,000 mg/kg - Rat , male and female
Not classified as hazardous for acute toxicity according to GHS
Information given is based on data obtained from similar substances.
Unpublished internal reports

Acute toxicity (other routes of administration) : no data available

Skin corrosion/irritation

Skin irritation

Terpenyl Cyclohexanol : Irritating to skin.
Method: Expert judgement
Unpublished internal reports

Guinea pig
Product is not phototoxic
Information given is based on data obtained from similar substances.
Unpublished internal reports

Serious eye damage/eye irritation
Eye irritation

Terpenyl Cyclohexanol	:	Rabbit slight irritation Information given is based on data obtained from similar substances. Unpublished internal reports

Respiratory or skin sensitisation
Sensitisation

Terpenyl Cyclohexanol	:	Local lymph node assay - Mouse Not classified as sensitising by skin contact Method: OECD Test Guideline 429 internal evaluation Ambiguous due to the presence of irritation Unpublished internal reports

Mutagenicity
Genotoxicity in vitro

Terpenyl Cyclohexanol	:	Ames test with or without metabolic activation negative Method: OECD Test Guideline 471 Information given is based on data obtained from similar substances. Unpublished internal reports
Genotoxicity in vivo	:	no data available

Carcinogenicity

Carcinogenicity	:	no data available

Toxicity for reproduction and development

Toxicity to reproduction/Fertility	:	no data available
Developmental Toxicity/Teratogenicity	:	no data available

STOT
STOT - single exposure

Terpenyl Cyclohexanol		Toxicology Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.
STOT - repeated exposure	:	no data available

Aspiration toxicity

Aspiration toxicity	:	no data available

SECTION 12: Ecological information

12.1 Toxicity

Aquatic Compartment
Acute toxicity to daphnia and other aquatic invertebrates.

Terpenyl Cyclohexanol	:	EC50 - 48 h : 1 - 10 mg/l - Daphnia similis (water flea) static test Analytical monitoring: no Method: OECD Test Guideline 202 Toxic to aquatic invertebrates. Information given is based on data obtained from similar substances. Unpublished internal reports Result expressed in nominal loading rate (product tested as a saturated solution or as a WAF/WSF)

Ecotoxicity assessment
Acute aquatic toxicity

Terpenyl Cyclohexanol	:	Toxic to aquatic life.

Chronic aquatic toxicity

Terpenyl Cyclohexanol	:	Toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Biodegradability
Biodegradability

Terpenyl Cyclohexanol	:	The substance does not fulfill the criteria for ready biodegradability and ultimate aerobic biodegradability Structure-activity relationship (SAR)

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

Terpenyl Cyclohexanol	:	Bioaccumulative potential Structure-activity relationship (SAR)

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

no data available

12.6 Other adverse effects

Environment assessment

Terpenyl Cyclohexanol	:	Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product Disposal

Prohibition	:	Avoid release to the environment.
Advice on Disposal	:	Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

Advice on cleaning and disposal of packaging

Advice	:	Allow it to drain thoroughly. Clean using steam.
Reason for waste disposal	:	Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.
Other data	:	Dispose of in accordance with local regulations.

SECTION 14: Transport information

CN_DG

14.1 UN number UN 3082

14.2 Dangerous Good Description UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BORNYLCYCLOHEXANOL), 9, III

14.3 Transport hazard class 9

14.4 Packing group
Packing group III
Label(s): 9

14.5 Environmental hazards YES
Marine pollutant

14.6 Special precautions for user
For personal protection see section 8.

ADR

14.1 UN number UN 3082

14.2 Dangerous Good Description UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BORNYLCYCLOHEXANOL), 9, III, (E)

14.3 Transport hazard class 9

14.4 Packing group
Packing group III
Classification Code M6
Hazard Identification Number: 90
Label(s): 9
Tunnel restriction code (E)

14.5 Environmental hazards YES

Marine pollutant

14.6 Special precautions for user
For personal protection see section 8.

RID

14.1 UN number	UN 3082
14.2 Dangerous Good Description	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BORNYLCYCLOHEXANOL), 9, III
14.3 Transport hazard class	9
14.4 Packing group	
Packing group	III
Classification Code	M6
Hazard Identification Number:	90
Label(s):	9
14.5 Environmental hazards	YES
Marine pollutant	

14.6 Special precautions for user
For personal protection see section 8.

IMDG

14.1 UN number	UN 3082
14.2 Dangerous Good Description	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BORNYLCYCLOHEXANOL), 9, III
14.3 Transport hazard class	9
14.4 Packing group	
Packing group	III
Label(s):	9
EmS	F-A , S-F
14.5 Environmental hazards	YES
Marine pollutant	

14.6 Special precautions for user
For personal protection see section 8.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
no data available

IATA

14.1 UN number	UN 3082
14.2 Dangerous Good Description	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (BORNYLCYCLOHEXANOL), 9, III
14.3 Transport hazard class	9
14.4 Packing group	
Packing group	III
Label(s):	9
Packing instruction (cargo aircraft)	964
Max net qty/pkg	450.00 L
Packing instruction (passenger aircraft)	964
Max net qty/pkg	450.00 L
14.5 Environmental hazards	YES
Marine pollutant	
14.6 Special precautions for user	
For personal protection see section 8.	

SECTION 15: Regulatory information

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

Following last version of regulations are applicable for the chemical classification, SDS and label:
-General Rule for classification and hazard communication of chemicals, GB 13690
- Series standards of Safety rules for classification, precautionary labeling and precautionary statements of chemicals, GB 30000.2~GB 30000.29
-General rules for preparation of precautionary label for chemicals, GB 15258
-Safety data sheet for chemical products—Content and order of sections, GB/T 16483

Notification status

These data are not exhaustive but given for information. Contact your supplier for additional information

United States TSCA Inventory	:	YES (positive listing) On TSCA Inventory
Canadian Domestic Substances List (DSL)	:	YES (positive listing) All components of this product are on the Canadian DSL.
Australia Inventory of Chemical Substances (AICS)	:	YES (positive listing) On the inventory, or in compliance with the inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	:	YES (positive listing) On the inventory, or in compliance with the inventory
Korea. Korean Existing Chemicals Inventory (KECI)	:	YES (positive listing) On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	:	YES (positive listing) On the inventory, or in compliance with the inventory
European Inventory of Existing Commercial Chemical Substances (EINECS)	:	YES (positive listing) On the inventory, or in compliance with the inventory

SECTION 16: Other information

Full text of H-Statements

H315	Causes skin irritation.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Full text of P-Statements referred to under section 2.

P273	Avoid release to the environment.
P280	Wear protective gloves.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P501	Dispose of contents/ container to an approved waste disposal plant.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in an other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.