

**Orfom® MC17 Collector**

Version 1.1

Revision Date 2023-04-19

according to GB/T 16483 and GB/T 17519

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

Product Name : Orfom® MC17 Collector
Material : 1122712, 1122623, 1119870, 1119869, 1119868, 1119860,
1119867, 1119866, 1119861, 1119859

Company : Chevron Phillips Chemical Company LP
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:**Health:**

866.442.9628 (North America)
1.832.813.4984 (International)

Transport:

CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)
Belgium: 070 245 245 (24 hours/day, 7 days/week)
Bulgaria: +359 2 9154 233
Croatia: +3851 2348 342 (24 hours/day, 7 days/week)
Cyprus: 1401
Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402
Denmark: Danish Poison Center (Giftlinjen): +45 8212 1212
Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Finland: 0800 147 111 09 471 977 (24 hours/day)
France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)
Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Greece: (0030) 2107793777 (24 hours/day, 7 days/week)
Hungary: +36-80-201-199 (24 hours/day, 7 days/week)
Iceland: 543 2222 (24 hours/day, 7 days/week)
Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic
Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371
67042473. (24 hours.)

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Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Lithuania: +370 (85) 2362052
 Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)
 Malta: +356 2395 2000
 The Netherlands: NVIC: +31 (0)88 755 8000
 Norway: 22 59 13 00 (24 hours/day, 7 days/week)
 Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
 Portugal: CIAV phone number: +351 800 250 250
 Romania: +40213183606
 Slovakia: +421 2 5477 4166
 Slovenia: Phone number: 112
 Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)
 Sweden: 112 – ask for Poisons Information

Responsible Department : Product Safety and Toxicology Group
 E-mail address : SDS@CPChem.com
 Website : www.CPChem.com

SECTION 2: Hazards identification**Classification of the substance or mixture**

GHS Classification and Labeling: Follow GB 13690, GB 15258 and GB 30000.2 to GB 30000.29 (GHS 2011)

Emergency Overview**Danger**

Physical state: liquid **Color:** Colorless **Odor:** mild hydrocarbon

Hazards : Combustible liquid. Causes skin irritation. May cause an allergic skin reaction. May be fatal if swallowed and enters airways. May cause long lasting harmful effects to aquatic life.

Classification

: Flammable liquids, Category 4
 Skin corrosion/irritation, Category 2
 Skin sensitization, Category 1
 Aspiration hazard, Category 1
 Long-term (chronic) aquatic hazard, Category 4

Labeling

Symbol(s) :



Signal Word : Danger

Hazard Statements : H227: Combustible liquid.
 H304: May be fatal if swallowed and enters airways.
 H315: Causes skin irritation.
 H317: May cause an allergic skin reaction.
 H413: May cause long lasting harmful effects to aquatic life.

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Precautionary Statements : **Prevention:**
 P210: Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
 P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
 P264: Wash skin thoroughly after handling.
 P273: Avoid release to the environment.
 P280: Wear protective gloves/ eye protection/ face protection.
Response:
 P301+P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
 P302+P352: IF ON SKIN: Wash with plenty of water.
 P331: Do NOT induce vomiting.
 P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.
 P362+P364: Take off contaminated clothing and wash it before reuse.
 P370+P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:
 P403 + P235: Store in a well-ventilated place. Keep cool.
Disposal:
 P501: Dispose of contents/ container to an approved waste disposal plant.

SECTION 3: Composition/information on ingredients

Synonyms : Orfom® MC17a Collector

Chemical name	CAS-No. / EINECS-No.	Concentration [wt%]
tert-Dodecanethiol	25103-58-6	20 - 80
C13-C16 Isoalkanes	68551-20-2	20 - 80
C12-C14 Isoalkanes	68551-19-9	20 - 80
Thiol synthesis by-products		1 - 4

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

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Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point	:	79°C (175°F)
Suitable extinguishing media	:	Carbon dioxide (CO2).
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation.
Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
Methods for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage**Handling**

Advice on safe handling	:	Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited
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in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers : No smoking. Keep in a well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection**Ingredients with workplace control parameters****Chevron Phillips Chemical Company LP**

Components	Basis	Value	Control parameters	Note
tert-Dodecanethiol	Manufacturer	TWA	0.1 ppm,	
C12-C14 Isoalkanes	Manufacturer	TWA	1,200 mg/m3	RCP,

RCP Reciprocal Calculation Procedure

CN

Components	Basis	Value	Control parameters	Note
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Not applicable

Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as: A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe

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the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant protective clothing. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Footwear protecting against chemicals.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

- Physical state : liquid
- Color : Colorless
- Odor : mild hydrocarbon

Safety data

- Flash point : 79°C (175°F)
- Lower explosion limit : No data available
- Upper explosion limit : No data available
- Molecular weight : 202.44 g/mol
- pH : Not applicable
- Pour point : No data available
- Boiling point/boiling range : 233°C (451°F)
- Vapor pressure : 4.00 Pa
at 24°C (75°F)
- Relative density : 0.80
at 16 °C (61 °F)
- Density : 6.7 L/G
- Water solubility : No data available
- Partition coefficient: n-octanol/water : No data available
- Viscosity, dynamic : 2.6 cP
at 20°C (68°F)

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Viscosity, kinematic : No data available

Relative vapor density : 3
(Air = 1.0)

Evaporation rate : < 1

SECTION 10: Stability and reactivity

Reactivity : Stable under recommended storage conditions.

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Hazardous reactions : Hazardous reactions: Vapors may form explosive mixture with air.

Conditions to avoid : Heat, flames and sparks.

Hazardous decomposition products : Carbon oxides
Sulfur oxides

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information**Acute oral toxicity**

tert-Dodecanethiol : LD50: > 2,000 mg/kg
Species: Rat
Sex: female
Method: OECD Test Guideline 423

C13-C16 Isoalkanes : LD50: > 5,000 mg/kg
Species: Rat
Sex: male and female
Method: OECD Test Guideline 401
Information given is based on data obtained from similar substances.

C12-C14 Isoalkanes : LD50: > 5,000 mg/kg
Species: Rat
Sex: male and female
Method: OECD Test Guideline 401
Information given is based on data obtained from similar substances.

Acute inhalation toxicity

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tert-Dodecanethiol	: LC50: > 1.97 mg/l Exposure time: 4 h Species: Rat Sex: male and female Test atmosphere: vapor Method: OECD Test Guideline 403 Information given is based on data obtained from similar substances.
C13-C16 Isoalkanes	LC50: > 5.3 mg/l Exposure time: 4 h Species: Rat Sex: male and female Test atmosphere: dust/mist Method: OECD Test Guideline 403 An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration. Information given is based on data obtained from similar substances.
C12-C14 Isoalkanes	LC50: > 4.9 mg/l Exposure time: 4 h Species: Rat Sex: male and female Test atmosphere: vapor Method: OECD Test Guideline 403 An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration. Information given is based on data obtained from similar substances.

Acute dermal toxicity

tert-Dodecanethiol	: LD50: > 2,000 mg/kg Species: Rat Sex: male Method: OECD Test Guideline 402 Information given is based on data obtained from similar substances.
C13-C16 Isoalkanes	LD50: > 2,000 mg/kg Species: Rabbit Sex: male and female Method: OECD Test Guideline 402 Information given is based on data obtained from similar substances.
C12-C14 Isoalkanes	LD50: > 2,000 - 2,500 mg/kg Species: Rabbit Sex: male and female Method: OECD Test Guideline 402 Information given is based on data obtained from similar substances.

**Orfom® MC17 Collector
Skin irritation**

: Skin irritation

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largely based on animal evidence.
May cause skin irritation and/or dermatitis.

**Orfom® MC17 Collector
Eye irritation**

: May cause eye irritation.

Vapors may cause irritation to the eyes, respiratory system
and the skin.

**Orfom® MC17 Collector
Sensitization**

: Causes sensitization.
largely based on animal evidence.
Causes sensitization.

Repeated dose toxicity

tert-Dodecanethiol

: Species: Rat, male
Sex: male
Application Route: Inhalation
Dose: 0, 26, 98 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
Lowest observable effect level: 26 ppm
Method: OECD Test Guideline 412
Target Organs: Kidney, Liver

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Species: Rat, female
Sex: female
Application Route: Inhalation
Dose: 0, 26, 98 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: 26 ppm
Method: OECD Guideline 412
Target Organs: Liver, Kidney

Species: Dog, male and female
Sex: male and female
Application Route: Inhalation
Dose: 0, 25, 106 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: 25 ppm
Lowest observable effect level: 109 ppm
Method: OECD Test Guideline 412
Target Organs: Liver

Species: Mouse, male and female
Sex: male and female
Application Route: Inhalation
Dose: 0, 25, 109 ppm
Exposure time: 4 wk
Number of exposures: 6 h/d, 5 d/wk
Lowest observable effect level: 25 ppm
Method: OECD Test Guideline 412
Target Organs: Liver

Species: Rat, male
Sex: male
Application Route: oral gavage
Dose: 50, 100, 200 mg/kg
Exposure time: 10 wk
Number of exposures: once daily
NOEL: 200 mg/kg
Method: OECD Guideline 422
Target Organs: Kidney, Liver

Species: Rat, female
Sex: female
Application Route: oral gavage
Dose: 50, 100, 200 mg/kg
Exposure time: 8 - 9 wk
Number of exposures: once daily
NOEL: 200 mg/kg
Method: OECD Guideline 422
Target Organs: Liver

Species: Rat, male
Sex: male
Application Route: Inhalation
Dose: 5, 25, 100 ppm
Exposure time: 13 wk
Number of exposures: 6h/d, 5d/wk
NOEL: 25 ppm
Method: OECD Test Guideline 413

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	<p>Species: Rat, female Sex: female Application Route: Inhalation Dose: 5, 25, 100 ppm Exposure time: 13 wk Number of exposures: 6h/d, 5d/wk NOEL: 25 ppm Method: OECD Test Guideline 413</p>
C13-C16 Isoalkanes	<p>Species: Rat, male and female Sex: male and female Application Route: oral gavage Exposure time: 13 wk Number of exposures: 7 d/wk NOEL: > 5,000 mg/kg Method: OECD Test Guideline 408 No significant adverse effects were reported Information given is based on data obtained from similar substances.</p> <p>Species: Rat, male and female Sex: male and female Application Route: Inhalation Exposure time: 13 wk Number of exposures: 6 h/d NOEL: 30 mg/l Method: OECD Test Guideline 413 No significant adverse effects were reported Information given is based on data obtained from similar substances.</p> <p>Species: Rat, male and female Sex: male and female Application Route: Dermal Exposure time: 13 wk Number of exposures: 5 d/wk NOEL: > 495 mg/kg Method: OECD Test Guideline 411 No significant adverse effects were reported Information given is based on data obtained from similar substances.</p>
C12-C14 Isoalkanes	<p>Species: Rat, male and female Sex: male and female Application Route: oral gavage Dose: 100, 500, 1000 mg/kg/d Exposure time: 13 wk Number of exposures: daily NOEL: > 1000 mg/kg/d Method: OECD Test Guideline 408 No adverse effects expected Information given is based on data obtained from similar substances.</p>

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Species: Rat, male and female
 Sex: male and female
 Application Route: Inhalation
 Dose: 2600, 5200, 10400 mg/m³
 Exposure time: 90 d
 Number of exposures: 6 h/d; 5d/wk
 NOEL: > 10400 mg/m³
 Method: OECD Test Guideline 413
 No adverse effects expected
 Information given is based on data obtained from similar substances.

Genotoxicity in vitro

tert-Dodecanethiol : Test Type: Ames test
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

Test Type: Mouse lymphoma assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Guideline 476
 Result: negative

Test Type: Sister Chromatid Exchange Assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Guideline 479
 Result: negative

Test Type: Chromosome aberration test in vitro
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative

C13-C16 Isoalkanes Test Type: Reverse mutation assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative
 Remarks: Information given is based on data obtained from similar substances.

Test Type: Cytogenetic assay
 Test system: Chinese hamster cells
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative
 Remarks: Information given is based on data obtained from similar substances.

Test Type: Mouse lymphoma assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative
 Remarks: Information given is based on data obtained from similar substances.

C12-C14 Isoalkanes Test Type: Ames test
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471

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Result: negative

Test Type: Mouse lymphoma assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative

Test Type: Sister Chromatid Exchange Assay
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 479
 Result: negative

Genotoxicity in vivo

tert-Dodecanethiol : Test Type: In vivo micronucleus test
 Species: Mouse
 Route of Application: Oral
 Dose: 1250, 2500, 5000 mg/kg/bw
 Method: Mutagenicity (micronucleus test)
 Result: negative
 Remarks: Information given is based on data obtained from similar substances.

C12-C14 Isoalkanes : Test Type: dominant lethal test
 Species: Rat
 Route of Application: Intraperitoneal injection
 Dose: 300, 900 ppm
 Method: OECD Test Guideline 478
 Remarks: Information given is based on data obtained from similar substances.

Reproductive toxicity

tert-Dodecanethiol : Species: Rat
 Sex: male
 Application Route: oral gavage
 Dose: 50, 100, 200 mg/kg/d
 Exposure time: 10 wk
 Number of exposures: Daily
 Method: OECD Guideline 422
 NOAEL Parent: 200 mg/kg
 Animal testing did not show any effects on fertility.

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Species: Rat
 Sex: female
 Application Route: oral gavage
 Dose: 50, 100, 200 mg/kg/d
 Exposure time: 8 - 9 wk
 Number of exposures: Daily
 Method: OECD Guideline 422
 NOAEL Parent: 200 mg/kg
 NOAEL F1: 100 mg/kg
 Animal testing did not show any effects on fertility.
 Reduced fetal weight.

Species: Rat
 Sex: male
 Application Route: oral gavage
 Dose: 25, 75, 200 mg/kg/d
 Exposure time: 18 wk
 Number of exposures: Daily
 Method: OECD Test Guideline 443
 NOAEL Parent: 200 mg/kg
 NOAEL F1: 200 mg/kg
 NOAEL F2: 200 mg/kg
 Animal testing did not show any effects on fertility.

Species: Rat
 Sex: female
 Application Route: oral gavage
 Dose: 25, 75, 200 mg/kg/d
 Exposure time: 16 - 18 wk
 Number of exposures: Daily
 Method: OECD Test Guideline 443
 NOAEL Parent: 200 mg/kg
 NOAEL F1: 200 mg/kg
 NOAEL F2: 200 mg/kg
 Animal testing did not show any effects on fertility.
 Reduced fetal weight.

C13-C16 Isoalkanes

Species: Rat
 Sex: male and female
 Application Route: oral gavage
 Dose: 50, 100, 750 mg/kg/d
 Exposure time: 70 d
 Number of exposures: Daily
 Method: OECD Test Guideline 416
 NOAEL Parent: \geq 750 mg/kg
 NOAEL F1: \geq 750 mg/kg
 No adverse effects expected
 Information given is based on data obtained from similar substances.

Developmental Toxicity**tert-Dodecanethiol**

: Species: Rat
 Application Route: Inhalation
 Dose: 0, 22.7, 88.6 ppm
 Number of exposures: 6 hrs/d
 Test period: GD 6-19
 Method: OECD Guideline 414
 NOAEL Teratogenicity: \geq 88.6 ppm

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No adverse effects expected

Species: Mouse
 Application Route: Inhalation
 Dose: 0, 22.7, 88.6 ppm
 Number of exposures: 6 hrs/d
 Test period: GD 6-19
 Method: OECD Guideline 414
 NOAEL Teratogenicity: ≥ 88.6 ppm
 No adverse effects expected

Species: Rabbit
 Application Route: oral gavage
 Dose: 0, 50, 100, 200 mg/kg/d
 Number of exposures: Daily
 Test period: GD 6-28
 Method: OECD Guideline 414
 NOAEL Teratogenicity: 100 mg/kg
 NOAEL Maternal: 100 mg/kg
 Embryotoxic effects and adverse effects on the offspring were detected only at high maternally toxic doses

C12-C14 Isoalkanes

Species: Rat
 Application Route: Inhalation
 Dose: 0, 400, 1200 ppm
 Exposure time: 6h
 Test period: GD 6-15
 NOAEL Teratogenicity: 1200 ppm
 NOAEL Maternal: 1200 ppm
 Information given is based on data obtained from similar substances.

Species: Rat
 Application Route: Inhalation
 Dose: 300, 900 ppm
 Exposure time: 6h
 Test period: GD 6-15
 NOAEL Teratogenicity: ≥ 900 ppm
 NOAEL Maternal: ≥ 900 ppm
 Information given is based on data obtained from similar substances.

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Aspiration toxicity**

: May be fatal if swallowed and enters airways.

CMR effects

tert-Dodecanethiol

: Carcinogenicity: Not available
 Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
 Teratogenicity: Animal testing did not show any effects on fetal development.
 Reproductive toxicity: No toxicity to reproduction

C13-C16 Isoalkanes

Carcinogenicity: Not available
 Mutagenicity: In vitro tests did not show mutagenic effects
 Reproductive toxicity: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

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C12-C14 Isoalkanes

Carcinogenicity: Not available

Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects

Teratogenicity: Animal testing did not show any effects on fetal development.

Reproductive toxicity: Animal testing did not show any effects on fertility.

Orfom® MC17 Collector**Further information**

: Solvents may degrease the skin.

SECTION 12: Ecological information**Toxicity to fish**

tert-Dodecanethiol

: LL50: > 100 mg/l

Exposure time: 96 h

Species: Danio rerio (Zebra Fish)

static test Method: OECD Test Guideline 203

No toxicity at the limit of solubility.

C13-C16 Isoalkanes

LL50: > 1,028 mg/l

Exposure time: 96 h

Species: Scophthalmus maximus (Flatfish, Flounder)

Method: OECD Test Guideline 203

Information given is based on data obtained from similar substances.

C12-C14 Isoalkanes

LL50: > 1,000 mg/l

Exposure time: 96 h

Species: Oncorhynchus mykiss (rainbow trout)

semi-static test Method: OECD Test Guideline 203

Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates

tert-Dodecanethiol

: EC50: > 0.056 mg/l

Exposure time: 48 h

Species: Daphnia magna (Water flea)

semi-static test Method: OECD Test Guideline 202

No toxicity at the limit of solubility.

C13-C16 Isoalkanes

LL50: > 3,193 mg/l

Exposure time: 48 h

Species: Acartia tonsa (Marine Copepod)

static test Method: ISO 14669 and PARCOM method

C12-C14 Isoalkanes

EL50: > 1,000 mg/l

Exposure time: 48 h

Species: Daphnia magna (Water flea)

static test Method: OECD Test Guideline 202

Information given is based on data obtained from similar substances.

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Toxicity to algae

C13-C16 Isoalkanes : EL50: > 3,200 mg/l
 Exposure time: 72 h
 Species: Skeletonema costatum (Marine Algae)
 Growth inhibition Method: ISO 10253

C12-C14 Isoalkanes EL50: > 1,000 mg/l
 Exposure time: 72 h
 Species: Pseudokirchneriella subcapitata (green algae)
 Growth inhibition Method: OECD Test Guideline 201
 Information given is based on data obtained from similar substances.

Toxicity to bacteria

tert-Dodecanethiol : NOEC: 8.6 mg/l
 Exposure time: 3 h
 Growth rate
 Respiration inhibition
 Method: OECD Test Guideline 209

NOEC: > 10 mg/l
 Exposure time: 3 h
 Growth rate
 Respiration inhibition
 Method: OECD Test Guideline 209

C13-C16 Isoalkanes > 100 mg/l
 Exposure time: 3 h
 Respiration inhibition
 Method: OECD Test Guideline 209
 Information given is based on data obtained from similar substances.

Toxicity to fish (Chronic toxicity)

C12-C14 Isoalkanes : No data available:

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

tert-Dodecanethiol : NOEC: 0.0108 mg/l
 Exposure time: 21 d
 Species: Daphnia magna (Water flea)
 semi-static test
 Method: OECD Test Guideline 211
 No toxicity at the limit of solubility.

Biodegradability : Taking into consideration the properties of several ingredients, the product is estimated not to be readily biodegradable according to OECD classification.

Elimination information (persistence and degradability)

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Bioaccumulation

tert-Dodecanethiol : Species: Danio rerio (zebra fish)
 Exposure time: 15 d
 Bioconcentration factor (BCF): > 500 - < 1,950
 Method: OECD Test Guideline 305
 Biomagnification factor <1
 The product may be accumulated in organisms.

C13-C16 Isoalkanes : The product may be accumulated in organisms.

C12-C14 Isoalkanes : The product may be accumulated in organisms.

Mobility

tert-Dodecanethiol : After release, adsorbs onto soil.

C13-C16 Isoalkanes : immobile

C12-C14 Isoalkanes : immobile

Results of PBT assessment

tert-Dodecanethiol : Non-classified PBT substance, Non-classified vPvB substance

C13-C16 Isoalkanes : Non-classified PBT substance, Non-classified vPvB substance

C12-C14 Isoalkanes : Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information : May cause long lasting harmful effects to aquatic life.

Ecotoxicology Assessment**Short-term (acute) aquatic hazard**

tert-Dodecanethiol : No toxicity at the limit of solubility.

C13-C16 Isoalkanes : This material is not expected to be harmful to aquatic organisms.

C12-C14 Isoalkanes : This material is not expected to be harmful to aquatic organisms.

Thiol synthesis by-products : No toxicity at the limit of solubility.

Long-term (chronic) aquatic hazard

tert-Dodecanethiol : May cause long lasting harmful effects to aquatic life.

C13-C16 Isoalkanes : This material is not expected to be harmful to aquatic organisms.

C12-C14 Isoalkanes : This material is not expected to be harmful to aquatic organisms.

Thiol synthesis by-products : May cause long lasting harmful effects to aquatic life.

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SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Testing (ASTM D4206) has shown product does not sustain combustion.

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

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ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
 NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information**Notification status**

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Australia AIIC	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	Not in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations. Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
Philippines PICCS	:	Not in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory
Other regulations	:	Law on the Prevention and Control of Occupational Diseases

SECTION 16: Other information**Further information**

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AIIC	Australian Inventory of Industrial Chemicals	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%	ATE	Acute toxicity estimate