

Product: **PALADIN® EC**

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SDS No.: 005813-001 (Version 1.0)

Date 26.01.2022

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Identification of the mixture: PALADIN® EC

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

Use of the Substance/Mixture : Fumigation agent

1.3. Details of the supplier of the safety data sheet

Supplier	ARKEMA Thiochimie 420 rue d'Estienne d'Orves 92705 Colombes Cedex, FRANCE Telephone: +33 (0)1 49 00 80 80 Telefax: +33 (0)1 49 00 83 96 E-mail address: pars-drp-fds@arkema.com http://www.arkema.com
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1.4. Emergency telephone number

+ 33 1 49 00 77 77
European emergency phone number: 112

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008):

Flammable liquid, 2, H225
 Oral: Acute toxicity, 3, H301
 Inhalation: Acute toxicity, 3, H331
 Eye irritation, 2, H319
 Skin sensitisation, 1, H317
 Inhalation: Specific target organ toxicity - single exposure, 1, Upper respiratory tract, H370
 Specific target organ toxicity - single exposure, 3, Central nervous system, H336
 Acute aquatic toxicity, 1, H400
 Chronic aquatic toxicity, 1, H410

Additional information:

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

2.2. Label elements

Label elements (REGULATION (EC) No 1272/2008):

Hazardous components which must be listed on the label:

dimethyl disulphide
 2-Ethylhexan-1-ol

Hazard pictograms:



Signal word:

Danger

Hazard statements:

H225 : Highly flammable liquid and vapour.
H301 + H331 : Toxic if swallowed or if inhaled.
H317 : May cause an allergic skin reaction.
H319 : Causes serious eye irritation.
H336 : May cause drowsiness or dizziness.
H370 : Causes damage to organs.
H410 : Very toxic to aquatic life with long lasting effects.

Precautionary statements:

Prevention:

P210 : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 : Avoid release to the environment.
P280 : Wear protective gloves and protective clothing and eye protection and face protection.

Response:

P301 + P310 + P330 : IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
P370 + P378 : In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391 : Collect spillage.

Storage:

P403 + P233 : Store in a well-ventilated place. Keep container tightly closed.

2.3. Other hazards

Potential health effects:

May cause sensitisation by skin contact.

Acute exposure: Prolonged or repeated exposure may cause: Skin irritation. dermatitis
Inhalation: Irritating to respiratory system.
Skin contact: Slightly irritating to skin.
Eye contact: Slightly irritating to eyes.

Environmental Effects:

Very toxic to fish. Toxic to daphnia. Toxic to algae. Bioaccumulation is unlikely.

Physical and chemical hazards:

Highly flammable Thermal decomposition giving flammable and toxic products
Decomposition products: See chapter 10

Other:

Results of PBT and vPvB assessment :

According to REACH regulation, annex XIII, this mixture contains no substance meeting PBT and vPvB criteria.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Chemical nature of the mixture¹:

Hazardous components (accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)) :

Chemical name ¹ & REACH Registration Number ²	EC-No.	CAS-No.	Concentration	Classification REGULATION (EC) No 1272/2008	specific concentration limit, M-Factors, Acute toxicity estimate
Dimethyl disulphide (01-2119484867-17) (N° ANNEX: 016-098-00-3)	210-871-0	624-92-0	> 90 %	Flam. Liq.2; H225 Acute Tox.3 (Oral); H301 Acute Tox.3 (Inhalation); H331 Eye Irrit.2; H319 Skin Sens.1; H317 STOT SE3; H336 STOT SE1; H370 Aquatic Acute1; H400 Aquatic Chronic1; H410	M-Factor Acute = 1 M-Factor Chronic = 10 ATE Inhalation: (ATE) 5 mg/l ATE Ingestion: (ATE) 190 mg/kg
Benzenesulfonic acid, C10-13-alkyl derivs., calcium salts (01-2119560592-37)	-		< 3 %	Skin Irrit.2; H315 Eye Dam.1; H318 Aquatic Chronic3; H412	
2-Ethylhexan-1-ol (01-2119487289-20)	203-234-3	104-76-7	< 2 %	Acute Tox.4 (Inhalation); H332 Skin Irrit.2; H315 Eye Irrit.2; H319 STOT SE3; H335	

¹: See chapter 14 for Proper Shipping Name

²: See the text of the regulation for applicable exceptions or provisions -

SECTION 4: FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

General advice:

Take off immediately all contaminated clothing.

Inhalation:

Move to fresh air. Oxygen or artificial respiration if needed. Keep under medical surveillance. In case of persistent problems : Hospitalise.

Skin contact:

Wash immediately, abundantly and thoroughly with soap and water. If significant contact: Keep under medical surveillance. Hospitalise.

Eye contact:

Wash immediately, abundantly and thoroughly with water. If irritation persists, consult an ophthalmologist.

Ingestion:

If the subject is unconscious, do not induce vomiting Hospitalise.

Protection of first-aiders:

In case of insufficient ventilation, wear suitable respiratory equipment.

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

Treatment: None known.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide (CO₂), Dry powder, Water spray

5.2. Special hazards arising from the substance or mixture:

Flammable liquid, Thermal decomposition giving flammable and toxic products, Hydrogen sulphide, Methylmercaptan, Dimethylsulphide

5.3. Advice for firefighters:

Specific methods:

Cool containers/tanks with water spray.

Special protective actions for fire-fighters:

Wear self-contained breathing apparatus and protective suit.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures:

Prohibit contact with skin and eyes and inhalation of vapours. Use personal protective equipment. In case of insufficient ventilation, wear suitable respiratory equipment. Evacuate non-essential staff and those not equipped with individual protection apparatus. Prohibit all sources of sparks and ignition - Do not smoke.

6.2. Environmental precautions:

Do not release into the environment. Do not let product enter drains. Dam up with sand or inert earth (do not use combustible materials).

6.3. Methods and materials for containment and cleaning up:

Recovery:

Pump into a labelled inert emergency tank. Absorb the remainder with an inert absorbent material. Rinse with water. Recover waste water for processing later.

Elimination:

Destroy product by oxidation with dilute solutions of : Hydrogen peroxide sodium hypochlorite or Destroy the product by incineration (in accordance with local and national regulations).

6.4. Reference to other sections: None.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling:

Technical measures/Precautions:

Storage and handling precautions applicable to products: Liquid. Flammable. With vapours explosive in air. Sensitizing. Toxic. Dangerous for the environment Provide appropriate exhaust ventilation at machinery. Provide showers, eye-baths. Provide self-contained breathing apparatus nearby. Well ventilate empty vats and tanks before entering. Provide electrical earthing of equipment.

Safe handling advice:

Keep well away from naked flames. Prohibit all sources of sparks and ignition - Do not smoke. Take precautionary measures against static discharges. Open drum carefully as content may be under pressure.

Hygiene measures:

Prohibit contact with skin and eyes and inhalation of vapours. Remove and wash contaminated clothing before re-use. When using do not eat, drink or smoke.
Wash hands after handling. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities:

Keep containers tightly closed in a cool, well-ventilated place. Store away from heat and ignition sources. Provide impermeable floor. Provide a catch-tank in a bunded area. Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres.

Incompatible products:

Strong oxidizing agents

Packaging material:

Recommended: Lined metallic drums., Stainless steel, Joints : polyethylene, Rilsan ®

To be avoided: Rubber, Plastic materials

7.3. Specific end use(s): None.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters:

Exposure Limit Values

Dimethyl disulphide

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ELV (IE)	2011	TWA	0.5	1.9	-
ELV (IE)	2011		-	-	Listed
ACGIH (US)	02 2012	SKIN	-	-	Can be absorbed through the skin.
ACGIH (US)	02 2012	TWA	0.5	-	-

Derived No Effect Level (DNEL): DIMETHYL DISULPHIDE :

End Use	Inhalation	Ingestion	Skin contact
Workers	15.5 mg/m3 (ST, SE) 6.4 mg/m3 (ST, LE) 2.16 mg/m3 (LT, SE) 2.02 mg/m3 (LT, LE)		1.97 mg/kg bw/day (LT, SE) 0.1 mg/cm2 (LT, LE)

LE : Local effects, **SE :** Systemic effects, **LT :** Long term, **ST :** Short term

Predicted No Effect Concentration: DIMETHYL DISULPHIDE :

Compartment:	Value:
Fresh water	0.00025 mg/l
Marine water	0.000025 mg/l
Water (Intermittent release)	0.0097 mg/l
Fresh water sediment	
Marine sediment	
Soil	1 mg/kg dw
Effects on waste water treatment plants	100 mg/l

Negligible or unlikely exposure pathways

Negligible or unlikely exposure pathways

8.2. Exposure controls:

General protective measures:

Ensure sufficient air exchange and/or exhaust in work areas

Personal protective equipment:

Respiratory protection:

Low concentrations or short activity: Information on the warning label

Suitable respiratory equipment: (Respiratory protection complying with EN 141.) Recommended Filter type: A2

High concentrations or prolonged activity: On line apparatus

Hand protection:

Splash contact, intermittent and prolonged Gloves nitrile rubber

Protective gloves complying with EN 374.

EC declaration of conformity category III EC

Glove thickness, depending on the use to ensure mechanical resistance to tear and abrasion

Eye/face protection: Safety glasses with side-shields
Skin and body protection: At the workplace : Combination with delayed penetration
Intervention at incident: anti-acid suit

Environmental exposure controls: See chapter 6

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:

Physical state (20°C): liquid
Colour: light yellow, to, light purple
Odour: slightly, fruity
Odour Threshold: approximately 8 - 10 ppb
Melting point/range : -84.7 °C
Boiling point/boiling range : 107 - 110 °C
Flammability: No data available.
Lower flammability limit : DIMETHYL DISULPHIDE :
1.1 %(V)
Upper flammability limit : DIMETHYL DISULPHIDE :
16.1 %(V)
Flash point: 18.5 °C (A9 Method (D. 92/69/ECC))
Auto-ignition temperature: 304 °C (Standard: A15)
Decomposition temperature: 390 °C
pH: Concentration 100 %, Temperature 20 °C, pH 6.7
Viscosity, kinematic: 0.774 mm²/s , at 20 °C (OECD Test Guideline 114)

Viscosity, dynamic: 0.62 mPa.s , at 20 °C
Water solubility: DIMETHYL DISULPHIDE :
2.7 g/l at 20 °C (OECD Test Guideline 105)
Solubility in other solvents: Soluble in: hydrocarbons
Partition coefficient: n-octanol/water: DIMETHYL DISULPHIDE :
log Kow : 1.91 , at 20.6 °C (OECD Test Guideline 107)
2-ETHYLHEXAN-1-OL :
log Kow : 2.9 , at 25 °C (OECD Test Guideline 117)
BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
log Kow : 2.89 , at 20 °C (Regulation (EC) No. 440/2008, Annex, A.8)
DODECAN-1-OL :
log Kow : 5.4 (OECD Test Guideline 117)
TETRADECANOL :
log Kow : 5.5 (measured)
Vapour pressure: 28 hPa , at 20 °C
38 hPa , at 25 °C
Density: 1,060 g/cm³ , at 20 °C
Relative density (Water=1): 1.06 at 20 °C
Relative vapour density: 3.25 Reference substance: Air=1

9.2. Other information:

Surface tension: 32.58 mN/m (OECD Test Guideline 115)
Molecular weight: 94.2 g/mol
Refractive index: 1.526 (at 20 °C)
Explosive properties:
Explosivity: Not relevant (due to its chemical structure)
Oxidizing properties: Not relevant (due to its chemical structure)

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: No data available.

10.2. Chemical stability:

The product is stable under normal handling and storage conditions.

10.3. Possibility of hazardous reactions:

None under normal conditions of use.

10.4. Conditions to avoid:

Keep away from heat and sources of ignition. To avoid thermal decomposition, do not overheat.

10.5. Incompatible materials to avoid:

Hydrogen peroxide, Strong oxidizing agents, Nitric acid, Hypochlorites

10.6. Hazardous decomposition products:

Thermal decomposition:

Decomposition temperature: 390 °C

Thermal decomposition giving flammable and toxic products, Hydrogen sulphide

Thermal decomposition giving flammable and harmful products, Methylmercaptan, Dimethylsulphide

SECTION 11: TOXICOLOGICAL INFORMATION

All available and relevant data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

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

Acute toxicity:

Inhalation: According to its composition : **Toxic if inhaled.**

DIMETHYL DISULPHIDE :
vapours

• In animals : ATE: 5 mg/l
LC50/4 h/Rat: 5.05 mg/l (1310 ppm) (Method: OECD Test Guideline 403), Target organs: Respiratory Tract (vapour)

Ingestion: According to its composition : **Toxic if swallowed.**

DIMETHYL DISULPHIDE :

• In animals : ATE: 190 mg/kg
LD50/Rat: 190 mg/kg (Method: OECD Test Guideline 423)

Dermal: According to its composition, can be considered as **Slightly harmful in contact with skin.**

DIMETHYL DISULPHIDE :

• In animals : No mortality/Rabbit: 5,000 mg/kg (Method: OECD Test Guideline 402)

Local effects (Corrosion / Irritation / Serious eye damage):

Skin contact: According to its composition : **Causes mild skin irritation.**

DIMETHYL DISULPHIDE :

• In man : Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

• In animals : Mild skin irritation (OECD Test Guideline 404, Rabbit)

2-ETHYLHEXAN-1-OL :

• In animals : Skin irritation (OECD Test Guideline 404, Rabbit, Exposure time: 4 h)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :

• In animals : Skin irritation (OECD Test Guideline 404, Rabbit)

Eye contact: According to its composition : **Causes serious eye irritation.**

DIMETHYL DISULPHIDE :

• In animals : Eye irritation (OECD Test Guideline 405, Rabbit)

2-ETHYLHEXAN-1-OL :

• In animals : Eye irritation (OECD Test Guideline 405, Rabbit)
Effect reversible within a few days

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :

• In animals : Severe eye irritation (OECD Test Guideline 405, Rabbit)

Respiratory or skin sensitisation:

Inhalation: No data available.

Skin contact: According to its composition : **May cause an allergic skin reaction.**

DIMETHYL DISULPHIDE :

• In animals :

Weak sensitizing effects by skin contact. (Method: OECD Test Guideline 429 LLNA: Local Lymph Node Assay, Mouse)

No skin allergy was observed. (Method: OECD Test Guideline 406 Buehler Test, Guinea pig)

CMR effects :

Mutagenicity:

According to its composition, can be considered as Overall not genotoxic

In vitro

DIMETHYL DISULPHIDE :

Ames test in vitro: Not genotoxic (Method: OECD Test Guideline 471)

In vitro chromosomal abnormality test on human lymphocytes: Not genotoxic (Method: OECD Test Guideline 473)

In vitro gene mutations test on mammalian cells: Inconclusive results (Method: OECD Test Guideline 476)

In vivo

DIMETHYL DISULPHIDE :

In vivo mammalian alkaline comet assay: Not genotoxic (Method: OECD Test Guideline 489)

Micronucleus test in vivo rat: Not genotoxic (Method: OECD Test Guideline 474)

DNA repair test on rats hepatocytes: Not genotoxic (Method: OECD Test Guideline 482)

Carcinogenicity:

No data available.

Reproductive toxicity:

Fertility:

According to its composition : Based on the available data, the substance is not suspected of having reprotoxic potential.

DIMETHYL DISULPHIDE :

• In animals :

Two generations study.: Absence of toxic effects on fertility, Absence of toxic effects for foetal development.

NOAEL (Parental toxicity): 5 ppm

NOAEL (Fertility): 80 ppm

NOAEL (Developmental Toxicity): 80 ppm

(Method: OECD Test Guideline 416, Rat, By inhalation)

Foetal development:

According to its composition : Based on the available data, the substance is not suspected of having developmental toxicity potential.

DIMETHYL DISULPHIDE :

• In animals :

Exposure during pregnancy

(Method: OECD Test Guideline 414, By inhalation)

Toxic effects for foetal development at toxic maternal doses, No teratogenic effects

NOAEL (Developmental Toxicity): 80 ppm

NOAEL (Maternal Toxicity): 20 ppm

(Rat)

Absence of toxic effects for foetal development.

NOAEL (Developmental Toxicity): > 135 ppm

NOAEL (Maternal Toxicity): > 135 ppm

(Rabbit)

Specific target organ toxicity :

Single exposure :

The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.

Exposure routes : Inhalation

Target Organs : Upper respiratory tract

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

Exposure routes : Inhalation

Target Organs : Central nervous system

Inhalation:

According to its composition : May cause drowsiness or dizziness. Risk of severe irritation of respiratory system

Olfactory threshold: approximately 8 - 10 ppb

DIMETHYL DISULPHIDE :

Olfactory threshold: approximately 8 - 10 ppb

Vapours may cause drowsiness and dizziness.

• In animals :

Irritating to nasal mucous membranes , vapour, Rat

Lowest irritating concentration : (73 mg/m3)

Repeated exposure: According to its composition : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

DIMETHYL DISULPHIDE :
• In animals :
By inhalation: Local irritation of the respiratory system
Atrophy of nasal epithelium, NOAEL= 5ppm (Method: OECD Test Guideline 424, Rat, 13 Weeks)
dermal route: Local irritation
Target organs: Skin, LOAEL= 10mg/kg (Method: OECD Test Guideline 410, Rabbit, 4 Weeks)

Aspiration hazard: Not relevant

11.2. Information on other hazards: Not relevant

Endocrine disrupting properties: None known.

Other information: Not relevant

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicology Assessment: All available and relevant data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

Acute aquatic toxicity : Very toxic to aquatic life.
Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

12.1. Toxicity :

Fish: From its composition, it must be considered as : , Very toxic to fish.

DIMETHYL DISULPHIDE :
LC50, 96 h (Oncorhynchus mykiss (rainbow trout)) : 0.97 mg/l (Method: OECD Test Guideline 203)
LC50, 96 h (Cyprinodon variegatus (sheepshead minnow)) : 5.6 mg/l (Method: OECD Test Guideline 203)

2-ETHYLHEXAN-1-OL :
LC50, 96 h (Leuciscus idus (Golden orfe)) : 17.1 mg/l (Method: OECD Test Guideline 203)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
LC50, 96 h : 1 - 10 mg/l (Method: OECD Test Guideline 203)

DODECAN-1-OL :
LC50, 96 h (Pimephales promelas (fathead minnow)) : 1.01 mg/l (Method: US EPA)

TETRADECANOL :
LC50, 96 h (Oncorhynchus mykiss) (Method: OECD Test Guideline 203) No effect up to the limit of solubility

Aquatic invertebrates: From its composition, it must be considered as : , Toxic to daphnia.

DIMETHYL DISULPHIDE :
EC50, 48 h (Daphnia magna (Water flea)) : 1.82 mg/l (Method: OECD Test Guideline 202)
EC50, 48 h (Americamysis) : 5 mg/l (Method: US-EPA OPPTS 850.1035)

2-ETHYLHEXAN-1-OL :
EC50, 48 h : 39 mg/l (Method: OECD Test Guideline 202, Immobilization)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
May be considered as comparable to a similar product for which experimental results are:
EC50, 48 h (Daphnia magna (Water flea)) : 2.9 mg/l (Method: OECD Test Guideline 202, Immobilization)

DODECAN-1-OL :
EC50, 48 h (Daphnia magna (Water flea)) : 0.765 mg/l (Method: DIN 38412, Immobilization)

TETRADECANOL :
48 h (Daphnia magna (Water flea)) (Method: OECD Test Guideline 202, Immobilization) No effect up to the limit of solubility

Aquatic plants: From its composition, it must be considered as : , Toxic to algae.

DIMETHYL DISULPHIDE :
ErC50, 96 h (Anabaena flos-aquae (cyanobacterium)) : 6.7 mg/l (Method: OECD Test Guideline 201)
ErC50, 96 h (Skeletonema costatum (marine diatom)) : 3.9 mg/l (Method: OECD Test Guideline 201)

2-ETHYLHEXAN-1-OL :
EC r50, 72 h (Desmodesmus subspicatus (green algae)) : 16.6 mg/l (Method: OECD Test Guideline 201)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
May be considered as comparable to a similar product for which experimental results are:
ErC50, 96 h (Raphidocelis subcapitata) : 29 mg/l

DODECAN-1-OL : ErC50, 72 h (Desmodesmus subspicatus (green algae)) : 0.66 mg/l (Method: OECD Test Guideline 201)

TETRADECANOL : 96 h (Desmodesmus subspicatus (green algae)) (Growth inhibition) No effect up to the limit of solubility

Microorganisms:

DIMETHYL DISULPHIDE : EC50, 3 h (Activated sludge) : > 1,000 mg/l (Method: OECD Test Guideline 209, Respiration inhibition)

DODECAN-1-OL : EC0, 30 min (Pseudomonas putida) : > 10,000 mg/l (Method: DIN 38412)

TETRADECANOL : NOEC, 0.5 h (Activated sludge) : >= 10,000 mg/l (Method: DIN 38412, Respiration inhibition)

Sediment toxicity:

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
NOEC (Lumbriculus variegatus): 81 mg/kg (Method: Reported data)
EC50 (Lumbriculus variegatus): >= 105 mg/kg (Method: Reported data)

TETRADECANOL : EC50: = 150 mg/kg dw (Method: Reported data)

Aquatic toxicity / Long term toxicity:

Fish:

DIMETHYL DISULPHIDE :
NOEC, 28 d (Pimephales promelas (fathead minnow)) : 0.936 mg/l (Method: OECD Test Guideline 210)
NOEC, 28 d (Cyprinodon variegatus (sheepshead minnow)) : 0.473 mg/l (Method: OECD Test Guideline 210)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
May be considered as comparable to a similar product for which experimental results are:
NOEC, 72 d (Salmo gairdneri) : 0.23 mg/l (Method: Reported data)

Aquatic invertebrates:

DIMETHYL DISULPHIDE :
NOEC r, 21 d (Daphnia magna (Water flea)) : 0.0025 mg/l (Method: OECD Test Guideline 211)
NOEC, 21 d (Mysidopsis bahia) : 0.464 mg/l (Method: OPPTS 850.1350)

2-ETHYLHEXAN-1-OL :
NOEC r, 21 d (Daphnia magna (Water flea)) : 1.6 mg/l (Method: OECD Test Guideline 211)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
May be considered as comparable to a similar product for which experimental results are:
NOEC, 21 d (Daphnia magna (Water flea)) : 1.18 mg/l (Method: Reported data, Reproduction inhibition)

DODECAN-1-OL :
EC10, 21 d (Daphnia magna (Water flea)) : 0.013 mg/l (Method: OECD Test Guideline 211, reproduction)

TETRADECANOL :
EC10, 21 d (Daphnia magna (Water flea)) : 0.0063 mg/l (Method: OECD Test Guideline 211, reproduction)

Aquatic plants:

DIMETHYL DISULPHIDE :
NOEC r, 96 h (Anabaena flos-aquae (cyanobacterium)) : 0.17 mg/l (Method: OECD Test Guideline 201)
NOEC r, 96 h (Skeletonema costatum) : 0.95 mg/l (Method: OECD Test Guideline 201)

2-ETHYLHEXAN-1-OL :
ErC10, 72 h (Desmodesmus subspicatus (green algae)) : 5.3 mg/l (Method: OECD Test Guideline 201)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :
May be considered as comparable to a similar product for which experimental results are:
NOEC r, 96 h (Pseudokirchneriella subcapitata (green algae)) : 0.5 mg/l (Method: Reported data)

DODECAN-1-OL :
ErC10, 72 h (Desmodesmus subspicatus (green algae)) : 0.27 mg/l (Method: OECD Test Guideline 201)

TETRADECANOL :

NOEC r, 96 h (Desmodesmus subspicatus (green algae)) (Method: OECD Test Guideline 201) No effect up to the limit of solubility

Non aquatic toxicity / Toxicity :

Toxicity to soil dwelling organisms:

DIMETHYL DISULPHIDE :

LC50, 14 d (Eisenia fetida) : 31.8 mg/kg (Soil dw) (Method: OECD Test Guideline 207)
NOEC, 28 d (Microorganisms) : 15,000 mg/kg (Soil dw) (Method: OECD Test Guideline 216)
NOEC, 28 d (Microorganisms) : 180 mg/kg (Soil dw) (Method: OECD Test Guideline 217)
NOEC, 28 d (Folsomia candida) : 10 mg/kg (Soil dw)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :

May be considered as comparable to a similar product for which experimental results are:
LC50, 14 d (Eisenia fetida (earthworms)) : > 1,000 mg/kg (Soil dw) (Method: OECD Test Guideline 207, mortality)
EC10, 21 d (Enchytraeus albidus) : 6.2 mg/kg (Soil dw) (Method: Reported data, reproduction)
EC10, 28 d (Enchytraeus crypticus) : >= 120 mg/kg (Soil dw) (Method: Reported data, reproduction)

Terrestrial plants:

DIMETHYL DISULPHIDE :

NOEC, 21 d (Lycopersicon esculentum) : 41.5 mg/kg

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :

May be considered as comparable to a similar product for which experimental results are:
NOEC, 21 d : 100 mg/kg (Method: OECD Test Guideline 208, Growth inhibition)

12.2. Persistence and degradability :

Biodegradation (In water):

Based on the available information, it is not possible to conclude on biodegradability of this mixture.

DIMETHYL DISULPHIDE :

The 10 day time window criterion is not fulfilled. Not readily biodegradable.: 50 - 60 % after 28 d (Method: OECD Test Guideline 310)

2-ETHYLHEXAN-1-OL :

Readily biodegradable: 79 - 100 % after 14 d (Method: OECD Test Guideline 301 C)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS :

Readily biodegradable: 100 % after 28 d (Method: OECD Test Guideline 301 B)

DODECAN-1-OL :

Readily biodegradable: 80 - 100 % after 28 d (Method: OECD Test Guideline 301 D)

TETRADECANOL :

Readily biodegradable: 92 % after 28 d (Method: ISO 10708)

12.3. Bioaccumulative potential :

Bioaccumulation: **None of the product and /or main component quoted in section 3 and/or analogue substance/metabolite is expected to bioaccumulate.**

DIMETHYL DISULPHIDE : Partition coefficient: n-octanol/water: log Kow : 1.91 , at 20.6 °C (Method: OECD Test Guideline 107)

2-ETHYLHEXAN-1-OL : Partition coefficient: n-octanol/water: log Kow : 2.9 , at 25 °C (Method: OECD Test Guideline 117)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS : Partition coefficient: n-octanol/water: log Kow : 2.89 , at 20 °C (Method: Regulation (EC) No. 440/2008, Annex, A.8)

DODECAN-1-OL : Partition coefficient: n-octanol/water: log Kow : 5.4 (Method: OECD Test Guideline 117)

TETRADECANOL : Partition coefficient: n-octanol/water: log Kow : 5.5 (Method: measured)

BENZENESULFONIC ACID, C10-13-ALKYL DERIVS., CALCIUM SALTS : Bioconcentration factor (BCF): 2 - 1,000 (Method: OECD Test Guideline 305 E, Pimephales promelas (fathead minnow))

DODECAN-1-OL : Bioconcentration factor (BCF): 510 - 750 (Method: calculated)

TETRADECANOL : Bioconcentration factor (BCF): 670 - 1,000 (Method: calculated)

12.4. Mobility in soil - Distribution among environmental compartments:

Vapor pressure: 28 hPa, 20 °C
38 hPa, 25 °C

Surface tension: 32.58 mN/m (Method: OECD Test Guideline 115)

Absorption / desorption:

DIMETHYL DISULPHIDE : log Koc: 1.53 (Method: OECD Test Guideline 106)

2-ETHYLHEXAN-1-OL : Koc: 131.1 (Method: calculated)

DODECAN-1-OL : log Koc: 3.71 (Method: OECD Test Guideline 121)

TETRADECANOL : log Koc: 4.53 (Method: OECD Test Guideline 121)

12.5. Results of PBT and vPvB assessment :

According to REACH regulation, annex XIII, this mixture contains no substance meeting PBT and vPvB criteria.

12.6. Endocrine disrupting properties: None known.

12.7. Other adverse effects: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods:

Disposal of product: Destroy product by oxidation with dilute solutions of : Hydrogen peroxide sodium hypochlorite or Destroy the product by incineration (in accordance with local and national regulations).

SECTION 14: TRANSPORT INFORMATION

Regulation	14.1. UN number	14.2.UN proper shipping name	14.3.Classes*	Label	14.4. PG*	14.5. Environmental hazards	14.6. Special precautions for user
ADR	2381	DIMETHYL DISULPHIDE	3	3(6.1)	II	yes	
ADN	2381	DIMETHYL DISULPHIDE	3	3(6.1)	II	yes	
RID	2381	DIMETHYL DISULPHIDE	3	3(6.1)	II	yes	
IATA Cargo							Not permitted for transport
IATA Passenger							Not permitted for transport
IMDG	2381	DIMETHYL DISULPHIDE	3	3(6.1)	II	Marine pollutant	EmS Number: F-E, S-D Mark: MP

*Description: 14.3. Transport hazard class(es)

14.4. Packing group

14.7. **Maritime transport in bulk according to IMO instruments:** Not applicable

SECTION 15: REGULATORY INFORMATION

Safety data sheets: accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)

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

15.2. **Chemical safety assessment:**

A Chemical Safety Assessment is not required for this substance when it is used in the specified applications.

INVENTORIES:

European union/EEA : In the event of purchase from an Arkema legal entity based in the European Economic Area (EEA), it is established that this product complies with the registration provisions of REACH Regulation (EC) No. 1907/2006, given that all of its components are excluded, exempted and / or registered. If purchasing from a legal entity established outside the EEA, please contact your local representative for more information.

TSCA (USA) : Conforms to
DSL/NDSL (CA) : All components of this product are on the Canadian DSL
IECSC (CN) : Conforms to
ENCS (JP) : Does not conform
ISHL (JP) : Does not conform
KECI (KR) : Conforms to
PICCS (PH) : Conforms to
NZIOC (NZ) : Conforms to
AIIC (AU) : All components of this product are listed or exempted
TCSI (TW) : Not all components of this product are listed or exempted

SECTION 16: OTHER INFORMATION

Full text of H, EUH-phrases referred to under sections 2 and 3

H225 Highly flammable liquid and vapour.
H301 Toxic if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H370 Causes damage to organs.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.

Update:

Safety datasheet sections which have been updated:		Type:
1-16	General update of Safety Data Sheet.	
2	Classification and labelling	Revisions

Thesaurus:

NOAEL : No Observed Adverse Effect Level (NOAEL)
LOAEL : Lowest Observed Adverse Effect Level (LOAEL)
bw : Body weight
food : oral feed
dw : Dry weight
vPvB : very Persistent and very Bioaccumulative
PBT : Persistent, Bioaccumulative and Toxic

This information applies to the PRODUCT AS SUCH and conforming to specifications of ARKEMA. In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear. The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes. The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive. It is the responsibility of the person receiving the product to refer to the

totality of the official documents concerning the use, the possession and the handling of the product. It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).

