according to Regulation (EC) No. 1907/2006



Date of first issue: 08.09.2017

Print Date: 05.02.2018

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

Product number: 207012

1.1 Product identifier

Version: 1.0

Product number 207012

Product name AZ 4999 Photoresist

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

Identified uses Polishing agent for surfaces.

Materials for use in technical applications

1.3 Details of the supplier of the safety data sheet

Company Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0

Responsible Department PM-OQR * e-mail: PM_SDS_Supply@merckgroup.com

1.4 Emergency telephone number

Please contact the regional company representation in your country.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2 H225: Highly flammable liquid and vapour.

On basis of test data.

Eye Irritation, Category 2 H319: Causes serious eye irritation.

Calculation method

Specific target organ toxicity - single

exposure, Category 3, Central nervous

system

H336: May cause drowsiness or dizziness.

Calculation method

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms





Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.

H319 Causes serious eye irritation.

H336 May cause drowsiness or dizziness.

Supplemental Hazard : EUH066 Repeated exposure may cause skin dryness or

according to Regulation (EC) No. 1907/2006

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Statements cracking.

Precautionary statements Prevention:

Keep away from heat, hot surfaces, sparks, open

flames and other ignition sources. No smoking.

P240 Ground/bond container and receiving equipment.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present

and easy to do. Continue rinsing.

Storage:

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

tightly closed.

Hazardous components which must be listed on the label: acetone

2.3 Other hazards

None known.

SECTION 3: Composition/information on ingredients

Chemical nature : Organic mixture in:

solvent

3.1 Substance

Not applicable

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. Registration number	Classification	Concentration (% w/w)
acetone	67-64-1 01-2119471330-49- xxxx	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336	>= 50 - <= 100

Substances with a workplace exposure limit

2-methoxy-1-methylethyl	acetate	108-65-6	Flam. Liq. 3; H226	>= 1 - < 10
		01-2119475791-29-	-	
		xxxx		

SECTION 4: First aid measures

4.1 Description of first aid measures

If inhaled : fresh air. Call in physician.

In case of skin contact : Take off immediately all contaminated clothing. Rinse skin

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with water/ shower.

In case of eye contact rinse out with plenty of water.

> Call in ophthalmologist. Remove contact lenses.

immediately make victim drink water (two glasses at most). If swallowed

Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms narcosis

Nausea Vomitina

Stomach/intestinal disorders

Headache somnolence Salivation

Risk of corneal clouding.

Drying-out effect resulting in rough and chapped skin.

Coma Dizziness

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media Water

Foam

Carbon dioxide (CO2)

Dry powder

Unsuitable extinguishing

media

For this substance/mixture no limitations of extinguishing

agents are given.

5.2 Special hazards arising from the substance or mixture

Specific hazards during

firefighting

Combustible.

Vapours are heavier than air and may spread along floors.

Pay attention to flashback.

Forms explosive mixtures with air at ambient temperatures. Development of hazardous combustion gases or vapours

possible in the event of fire.

5.3 Advice for firefighters

Special protective equipment : In the event of fire, wear self-contained breathing apparatus.

for firefighters

according to Regulation (EC) No. 1907/2006

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Further information : Cool closed containers exposed to fire with water spray.

Prevent fire extinguishing water from contaminating surface

water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Advice for non-emergency personnel:

Do not breathe vapours, aerosols.

Avoid substance contact. Ensure adequate ventilation.

Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures,

consult an expert.

Advice for emergency responders: Protective equipment see section 8.

6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Risk of explosion.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®).

Dispose of properly. Clean up affected area.

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.

Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Observe label precautions.

Advice on protection against

fire and explosion

Keep away from open flames, hot surfaces and sources of

ignition. Take precautionary measures against static

discharge.

Hygiene measures : Change contaminated clothing. Preventive skin protection

recommended. Wash hands after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage : Store in original container.

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areas and containers

Further information on storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Protected

from light.

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Risks from decomposition products: see section 10.3

Recommended storage temperature

Recommended storage temperature see product label.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
acetone	Workers	inhalation	Acute local effects	2420 mg/m3
	Workers	dermal	Long-term systemic effects	186 mg/kg
	Workers	inhalation	Long-term systemic effects	1210 mg/m3
	Consumers	dermal	Long-term systemic effects	62 mg/kg
	Consumers	inhalation	Long-term systemic effects	200 mg/m3
	Consumers	oral	Long-term systemic effects	62 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
acetone	Fresh water	10,6 mg/l
	Marine water	1,06 mg/l
	Fresh water sediment	30,4 mg/kg
	Marine sediment	3,04 mg/kg
	Soil	29,5 mg/kg
	Sewage treatment plant	100 mg/l

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

according to Regulation (EC) No. 1907/2006

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Personal protective equipment

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled and must meet the specifications of a standard EN/ISO/DIN. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye protection Safety glasses

Hand protection

splash contact

Glove material Nitrile rubber

Glove thickness 0,4 mm

Break through time > 10 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example: KCL 730 Camatril® -Velours (splash contact);. This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Protective measures Flame retardant antistatic protective clothing.

required when vapours/aerosols are generated. Respiratory protection

Recommended Filter type: : ABEK-filter

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls

General advice Do not flush into surface water or sanitary sewer system.

Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form liquid

Colour yellow

> to red

Odour like fruit

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Odour Threshold No information available.

Product number: 207012

pH Not applicable

Melting point No information available.

Boiling point/boiling range approximately 56 °C

Information refers to the main component.

Flash point < -18 °C

Evaporation rate No information available.

Flammability (solid, gas) No information available.

Lower explosion limit No information available.

Upper explosion limit No information available.

Vapour pressure No information available.

Relative vapour density No information available.

Density No information available.

Solubility(ies) No information available.

Water solubility partly soluble - phase separation

Partition coefficient: n-

octanol/water

No information available.

Auto-ignition temperature No information available.

Decomposition temperature No information available.

Viscosity, kinematic No information available.

Explosive properties No information available.

Oxidizing properties No information available.

9.2 Other data

None

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapours may form explosive mixture with air.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

according to Regulation (EC) No. 1907/2006

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10.3 Possibility of hazardous reactions

Hazardous reactions : Risk of explosion with:

nonmetallic oxyhalides halogen-halogen compounds

Chloroform nitrating acid nitrosyl compounds hydrogen peroxide halogen oxides

organic nitro compounds

peroxi compounds

Risk of ignition or formation of inflammable gases or vapours

with:

chromosulfuric acid chromyl chloride ethanolamine Fluorine

Strong oxidizing agents strong reducing agents

Nitric acid

chromium(VI) oxide Oxidizing agents

Violent reactions possible with:

alkalines Peroxides

Exothermic reaction with:

Bromine Alkali metals alkali hydroxides

Halogenated hydrocarbon

Sulphur dichloride phosphorous oxichloride

10.4 Conditions to avoid

Conditions to avoid : Warming.

Exposure to light.

10.5 Incompatible materials

Materials to avoid : Oxidizing agents

Strong acids Bases

no information available

10.6 Hazardous decomposition products

according to Regulation (EC) No. 1907/2006

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

Acute oral toxicity No data available

Acute inhalation toxicity Symptoms: Possible symptoms:, mucosal irritations

Acute dermal toxicity : No data available

Components:

acetone:

Acute oral toxicity LD50 (Rat, female): 5.800 mg/kg

Remarks: (ECHA)

Acute inhalation toxicity : LC50 (Rat): 76 mg/l

Exposure time: 4 h Test atmosphere: vapour

Remarks: (Lit.)

: LD50 (Rabbit): 20.000 mg/kg Acute dermal toxicity

Remarks: (IUCLID)

2-methoxy-1-methylethyl acetate:

Acute oral toxicity : LD50 (Rat): 8.532 mg/kg

Remarks: (RTECS)

Acute inhalation toxicity : No data available Acute dermal toxicity : No data available

Skin corrosion/irritation

Product:

No data available

Components:

acetone:

Species: Rabbit

Result: Repeated exposure may cause skin dryness or cracking.

Remarks: (External MSDS)

Result: Repeated exposure may cause skin dryness or cracking.

2-methoxy-1-methylethyl acetate:

Species: Rabbit Exposure time: 24 h

Method: OECD Test Guideline 404

Result: No irritation

according to Regulation (EC) No. 1907/2006

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Serious eye damage/eye irritation

Product:

Version: 1.0

No data available

Components:

acetone:

Species: Rabbit Result: irritating

Remarks: (External MSDS)

Result: irritating

2-methoxy-1-methylethyl acetate:

Species: Rabbit

Method: OECD Test Guideline 405

Result: No eye irritation

Respiratory or skin sensitisation

Product:

No data available

Components:

acetone:

Test Type: Maximisation Test

Species: Guinea pig Result: negative Remarks: (ECHA)

2-methoxy-1-methylethyl acetate:

Test Type: Maximisation Test Exposure routes: dermal Species: Guinea pig

Method: OECD Test Guideline 406 Result: Does not cause skin sensitisation.

Germ cell mutagenicity

Product:

No data available

Components:

acetone:

Genotoxicity in vitro : Test Type: Mutagenicity (mammal cell test): chromosome

aberration.

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

: Test Type: Ames test

Species: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

according to Regulation (EC) No. 1907/2006

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Method: OECD Test Guideline 471

Result: negative

Genotoxicity in vivo Test Type: Micronucleus test

Result: negative

Remarks: (National Toxicology Program)

2-methoxy-1-methylethyl acetate:

Genotoxicity in vitro Test Type: Ames test

Species: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Carcinogenicity

Product:

This information is not available.

Components:

acetone:

Remarks: Did not show carcinogenic effects in animal experiments.

(IUCLID)

STOT - single exposure

Product:

No data available

Components:

acetone:

Assessment: May cause drowsiness or dizziness.

STOT - repeated exposure

Product:

No data available

Components:

No data available

Repeated dose toxicity

Product:

No data available

Components:

No data available

according to Regulation (EC) No. 1907/2006

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Aspiration toxicity

Product:

Version: 1.0

No data available

Components:

No data available

Experience with human exposure

Product:

No data available

Components:

No data available

11.2 Other information

Product:

Other dangerous properties can not be excluded.

narcosis

Nausea

Vomiting

Stomach/intestinal disorders

Headache

somnolence

Salivation

Risk of corneal clouding.

Drying-out effect resulting in rough and chapped skin.

Coma

Dizziness

SECTION 12: Ecological information

12.1 Toxicity

Product:

No data available

Components:

acetone:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 5.540 mg/l

> Exposure time: 96 h Remarks: (Lit.)

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 6.100 mg/l

Exposure time: 48 h

Remarks: (Lit.)

EC5 (E.sulcatum): 28 mg/l Exposure time: 72 h

Remarks: (maximum permissible toxic concentration)

(Lit.)

according to Regulation (EC) No. 1907/2006

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Toxicity to algae : NOEC (M.aeruginosa): 530 mg/l

Exposure time: 8 d Analytical monitoring: no

Remarks: (maximum permissible toxic concentration)

(IUCLID)

Toxicity to microorganisms : EC50 (activated sludge): 59 - 67,4 mg/l

Exposure time: 30 min

Remarks: (Lit.)

EC5 (Pseudomonas putida): 1.700 mg/l

Exposure time: 16 h

Remarks: (maximum permissible toxic concentration)

(IUCLID)

2-methoxy-1-methylethyl acetate:

Toxicity to fish : LC50 (S.gairdnerii): 100 - 180 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 373 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): >

1.000 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : EC10 (activated sludge): > 1.000 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Toxicity to fish (Chronic

toxicity)

NOEC: 47,5 mg/l

Exposure time: 14 d

Species: Oryzias latipes (Orange-red killifish)

Method: OECD Test Guideline 204

Toxicity to daphnia and other :

aquatic invertebrates (Chronic toxicity)

NOEC: >= 100 mg/l Exposure time: 21 d

Species: Daphnia magna (Water flea)

Test Type: semi-static test

Method: OECD Test Guideline 211

12.2 Persistence and degradability

Product:

No data available

Components:

acetone:

according to Regulation (EC) No. 1907/2006

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Biodegradability : Result: Readily biodegradable.

Biodegradation: 91 % Exposure time: 28 d Remarks: (IUCLID)

Biochemical Oxygen : 1.850 mg/g

Demand (BOD) Incubation time: 5 d

Remarks: (IUCLID)

Chemical Oxygen Demand

(COD)

: 2.070 mg/g

Remarks: (IUCLID)

ThOD : 2.200 mg/g

Remarks: (Lit.)

2-methoxy-1-methylethyl acetate:

Biodegradability : Result: Readily eliminated from water

Biodegradation: 100 % Exposure time: 8 d

Method: OECD Test Guideline 302B

Biochemical Oxygen : 330 mg/g

Demand (BOD) Incubation time: 5 d

Remarks: (IUCLID)

Chemical Oxygen Demand

(COD)

1.740 mg/g

Remarks: (IUCLID)

ThOD : 1.820 mg/g

Remarks: (IUCLID)

12.3 Bioaccumulative potential

Product:

No data available

Components:

acetone:

Partition coefficient: n- : log Pow: -0,24

octanol/water Method: (experimental)

Remarks: Bioaccumulation is not expected.

(Lit.)

2-methoxy-1-methylethyl acetate:

Partition coefficient: n- : log Pow: 1,2 (20 °C)

octanol/water Method: OECD Test Guideline 117

Remarks: Bioaccumulation is not expected.

according to Regulation (EC) No. 1907/2006

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12.4 Mobility in soil

Product:

Version: 1.0

No data available

Components:

acetone:

No data available

2-methoxy-1-methylethyl acetate:

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered

to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of

0.1% or higher...

Components:

acetone:

Assessment : Substance does not meet the criteria for PBT or vPvB

according to Regulation (EC) No 1907/2006, Annex XIII..

2-methoxy-1-methylethyl acetate:

Assessment : Substance does not meet the criteria for PBT or vPvB

according to Regulation (EC) No 1907/2006, Annex XIII..

12.6 Other adverse effects

Product:

Additional ecological

information

: Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : See www.retrologistik.com for processes regarding the return

of chemicals and containers, or contact us there if you have

further questions.

SECTION 14: Transport information

Air transport(IATA)

14.1. UN/ID No. : UN 1993

according to Regulation (EC) No. 1907/2006

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14.2. Proper shipping name : Flammable liquid, n.o.s.

(Acetone,2-Methoxy-1-methylethyl acetate)

14.3. Class: 314.4. Packing group: II14.5 Environmentally: --

hazardous

14.6 Special precautions

: no

for user

Sea transport(IMDG)

14.1. UN number : UN 1993

14.2. Proper shipping name : FLAMMABLE LIQUID, N.O.S.

(Acetone, 2-Methoxy-1-methylethyl acetate)

 14.3. Class
 : 3

 14.4. Packing group
 : II

 14.5 Environmentally
 : -

hazardous

14.6 Special precautions : yes

for user

EmS Code : F-E, S-E

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

Not relevant

Land transport(ADR/RID)

14.1. UN number : UN 1993

14.2. Proper shipping name : FLAMMABLE LIQUID, N.O.S.

(Acetone, 2-Methoxy-1-methylethyl acetate)

14.3. Class : 3 14.4. Packing group : II 14.5 Environmentally : --

hazardous

SECTION 15: Regulatory information

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

Regulation (EC) No 850/2004 on persistent organic : Not applicable

pollutants

REACH - List of substances subject to authorisation : Not applicable

(Annex XIV)

Regulation (EC) No 1005/2009 on substances that : Not applicable

deplete the ozone layer

REACH - Candidate List of Substances of Very High : Not applicable

Concern for Authorisation (Article 59).

Regulation (EC) No 649/2012 of the European : Not applicable

Parliament and the Council concerning the export and

import of dangerous chemicals

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REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances,

placing on : 2-methoxypropyl acetate

preparations and articles (A

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of

major-accident hazards involving dangerous substances.

Quantity 1 Quantity 2

P5c FLAMMABLE LIQUIDS 5.000 t 50.000 t

Storage class : 3

Other regulations : Take note of Dir 94/33/EC on the protection of young people

at work.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: Other information

Training advice

Provide adequate information, instruction and training for operators.

Full text of H-Statements

H225
H226
Flammable liquid and vapour.
H319
Causes serious eye irritation.
H336
May cause drowsiness or dizziness.

Key or legend to abbreviations and acronyms used in the safety data sheet

according to Regulation (EC) No. 1907/2006

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AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response. Compensation, and Liability Act: CMR - Carcinogen, Mutagen or Reproductive Toxicant: DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk: IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO -International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified: NFPA - National Fire Protection Association: NO(A)EC - No Observed (Adverse) Effect Concentration: NO(A)EL - No Observed (Adverse) Effect Level: NOELR - No Observable Effect Loading Rate: NTP - National Toxicology Program: NZIoC - New Zealand Inventory of Chemicals: OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention: PBT - Persistent. Bioaccumulative and Toxic substance: PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Disclaimer

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.