



Exoquat PK47

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Date of issue: 23/12/2015 Revision date: 18/06/2024 Version: 2.9

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

1.1. Product identifier

Product form : Mixture
Product name : Exoquat PK47
UFI : ARHF-9T4C-050K-HU7S
EC-No. : 931-333-8
CAS-No. : 61789-40-0, 147170-44-3 (related CAS numbers)
Type of product : Aqueous solution.

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

1.2.1. Relevant identified uses

Main use category : Consumer use, Professional use, Industrial use
Industrial/Professional use spec : Wide dispersive use
Use of the substance/mixture : amphoteric surfactants

Title	Use descriptors
Industrial manufacture of AAPB (ES Ref.: 1.0)	SU3, SU8, SU9, PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC9c, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC38, PC39, PC40, PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC15, PROC17, PROC19, PROC24, ERC1
Formulation and other industrial use (ES Ref.: 2.0)	SU5, SU10, SU19, PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC9c, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC38, PC39, PC40, PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19, ERC2, ERC4
Professional use (ES Ref.: 3.0)	SU22, PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC9c, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC38, PC39, PC40, PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19, ERC8a
Consumer end-use of formulated products containing betaines (ES Ref.: 4.0)	SU21, PC1, PC3, PC8, PC31, PC35, PC39, ERC8a

Full text of use descriptors: see section 16

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

EOC Italia, branch of EOC Belgium
Via Famiglia Iona 25
IT- 13100 Vercelli
Italy
T +390161394695 - F +390161393907
reach@eocgroup.com - www.eocgroup.com

1.4. Emergency telephone number

Emergency number : +390161394695

Country	Organisation/Company	Address	Emergency number	Comment
Austria	Vergiftungsinformationszentrale	Stubenring 6 1010	+43 1 406 43 43	

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Country	Organisation/Company	Address	Emergency number	Comment
Belgium	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Militaire Reine Astrid	Rue Bruyn 1 1120	+32 70 245 245	Please dial: 070 245 245 for any urgent questions about intoxication (free of charge 24/7), if not accessible, dial: 02 264 96 30 (standard fee)
Bulgaria	Национален токсикологичен информационен център Многопрофилна болница за активно лечение и спешна медицина "Н.И.Пирогов"	бул. Ген. Едуард И. Тотлебен 21 1606	+359 2 9154 233	
Croatia	Centar za kontrolu otrovanja Institut za medicinska istraživanja i medicinu rada	Ksaverska Cesta 2 p.p. 291 10000	+385 1 234 8342	Information available 24/7 in Croatian and English
Cyprus	Κέντρου Δηλητηριάσεων		1401	Operating hours 24 hours / 24 hours, 7 days a week
Czech Republic	Toxikologické informační středisko Klinika pracovního lékařství VFN a 1. LF UK	Na Bojišti 1 120 00	+420 224 919 293 +420 224 915 402	
Denmark	Gifflinjen Bispebjerg Hospital	Bispebjerg Bakke 23E Opgang 20 C 2400	+45 82 12 12 12	
Estonia	Mürgistusteabekeskus Terviseamet	Paldiski mnt 81 10614	16662 +372 7943 794	Calling the hotline is anonymous and at the cost of a local call.
Finland	Myrkytystietokeskus	Stenbäckinkatu 9 PO BOX 100 00029	+358 800 147 111 +358 9 471 977	Open 24 hours a day 0800 147 111 (free of charge) 09 471 977 (normal rate call)
France	Centre Antipoison et de Toxicovigilance de Nancy Hôpital Central	29 avenue du Maréchal de Lattre-de-Tassigny 54035	+33 3 83 22 50 50	
Germany	Giftnotruf der Charité - Universitätsmedizin Berlin CBF, Haus VIII (Wirtschaftgebäude), UG	Hindenburgdamm 30 12203	+49 (0) 30 19240	
Greece	Poisons Information Centre Children's Hospital P&A Kyriakou	11762	+30 21 07 79 37 77	
Iceland	Eitrunarmiðstöð Landspítali	101	+354 543 22 22 +354 543 10 00	Around the clock, every day
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9	+353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
Italy	Centro Antiveneni di Roma CAV Policlinico "Umberto I", Università di Roma	Viale del Policlinico, 155 00161	+39 06 4997 8000	

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Country	Organisation/Company	Address	Emergency number	Comment
Latvia	Valsts ugunsdzēsības un glābšanas dienests Toksikoloģijas un sepses klīnikas Saindēšanās un zāļu informācijas centrs	Hipokrāta 2 1038	112 +371 67 04 24 73	works 24 hours a day
Lithuania	Apsinuodijimų informacijos biuras	Šiltnamių g. 29 04130	+370 5 236 20 52 +370 687 53378	
Luxembourg	Centre Anti-Poisons/Antigifcentrum c/o Hôpital Central de la Base - Reine Astrid	Rue Bruyn 1 1120	+352 8002 5500	Free telephone number with a 24/7 access. Experts answer all urgency questions on dangerous products in French, Dutch and English
Malta	Medicines & Poisons Info Office	Mater Dei Hospital MSD 2090	+356 2545 6508	
Netherlands	Nationaal Vergiftigingen Informatie Centrum	Huispostnummer B.00.118 Postbus 85500 3508 GA	+31 88 755 80 00	Only for the purpose of informing medical personnel in cases of acute intoxications (24 hours a day, 7 days a week)
Norway	Giftinformasjonen Helsedirektoratet	P.O. Box 7000 St. Olavs Plass 130	+47 22 59 13 00	Operating hours 24 hours / 24 hours, 7 days a week
Poland	Pomorskie Centrum Toksykologii Szpital MSWiA	Ul. Kartuska 4/6 80-104	+48 58 682 04 04 +48 58 309 83 83	
Portugal	Centro de Informação Antivenenos Instituto Nacional de Emergência Médica	Rua Almirante Barroso, 36 1000-013	+351 800 250 250	
Romania	Department of Clinical Toxicology Spitalul de Urgenta Floreasca	Calea Floreasca	+40 21 230 8000	
Slovakia	Národné toxikologické informačné centrum Univerzitná nemocnica Bratislava, pracovisko Kramáre, Klinika pracovného lekárstva a toxikológie	Limbová 5 833 05	+421 2 54 77 41 66	
Slovenia	Center za klinično toksikologijo in farmakologijo Univerzitetni klinični, Center Ljubljana	Zaloška 7 1000	112 +386 522 52 83	
Spain	Servicio de Información Toxicológica Instituto Nacional de Toxicología y Ciencias Forenses, Departamento de Madrid	C/José Echegaray nº4 28232	+34 91 562 04 20	(Toxicological emergencies only). Information in Spanish (24/7)
Sweden	Giftinformationscentralen	Solna Strandväg 21 171 54	112 – begär Giftinformation	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Serious eye damage/eye irritation, Category 1 H318
Hazardous to the aquatic environment – Chronic Hazard, Category 3 H412

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Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS05

CLP Signal word

: Danger

Contains

: 1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

Hazard statements (CLP)

: H318 - Causes serious eye damage.

H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P273 - Avoid release to the environment.

P280 - Wear eye protection, protective clothing, protective gloves.

P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts	EC-No.: 931-333-8 REACH-no: 01-2119489410-39	46	Eye Dam. 1, H318 Aquatic Chronic 3, H412

Specific concentration limits:

Name	Product identifier	Specific concentration limits
1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts	EC-No.: 931-333-8 REACH-no: 01-2119489410-39	(4 <C ≤ 10) Eye Irrit. 2, H319 (10 <C ≤ 100) Eye Dam. 1, H318

Full text of H- and EUH-statements: see section 16

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SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. If unconscious place in recovery position and seek medical advice. In case of respiratory arrest, administer artificial respiration. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Take victim to a doctor if irritation persists.
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact	: Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists. Wash with plenty of water.
First-aid measures after eye contact	: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Do not apply (chemical) neutralizing agents. In case of eye irritation consult an ophthalmologist.
First-aid measures after ingestion	: Rinse mouth thoroughly with water. In case of ingestion. Take to hospital.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after skin contact	: Causes skin irritation.
Symptoms/effects after eye contact	: Eye damage / irritation.

4.3. Indication of any immediate medical attention and special treatment needed

If exposed or concerned, get medical advice and attention.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water. Carbon dioxide (CO ₂). sand. All extinguishing media can be used.
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5.2. Special hazards arising from the substance or mixture

Fire hazard	: Low.
Explosion hazard	: None known.

5.3. Advice for firefighters

Precautionary measures fire	: Keep upwind. Do not inhale explosion and combustion gases.
Firefighting instructions	: Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Protection during firefighting	: Wear a self-contained breathing apparatus and chemical protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	: Gloves. face shield. protective clothing. Contact with walking surface may result in formation of slippery film/falling hazard.
Emergency procedures	: Wash contaminated clothing immediately. Keep public away from danger area.

6.1.2. For emergency responders

Protective equipment	: Wear protective gloves/protective clothing and eye/face protection.
Emergency procedures	: Avoid contact with skin, eyes and clothes.

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

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6.3. Methods and material for containment and cleaning up

- For containment : Contain leaking substance, pump over in suitable containers. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal.
- Methods for cleaning up : Contain leaking substance, pump over in suitable containers. Clean up any spills as soon as possible, using an absorbent material to collect it. Collect in closed and suitable containers for disposal. To clean the floor and all objects contaminated by this material, use plenty of water. Take off contaminated clothing.
- Other information : Comply with local regulations for disposal.

6.4. Reference to other sections

Disposal: see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Comply with applicable regulations. Remove contaminated clothing immediately. Clean contaminated objects and areas thoroughly observing environmental regulations. Keep away from sources of ignition - No smoking. Handle in accordance with good industrial hygiene and safety procedures. Discharge into the environment must be avoided. Keep container tightly closed. Either local exhaust or general room ventilation is usually required.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety procedures. Use good personal hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Clean bulk tanks periodically to prevent accumulation of bacteria.
- Storage conditions : Protect against: frost. Protect against direct sunlight.
- Storage temperature : see technical datasheet
- Storage area : Store in a dry area. Comply with applicable regulations. Collect spillage.
- Packaging materials : Plastic.

7.3. Specific end use(s)

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information available

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	12,5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	44 mg/m ³

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1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

DNEL/DMEL (General population)

Long-term - systemic effects, oral	7,5 mg/kg bodyweight/day
Long-term - systemic effects, dermal	7,5 mg/kg bodyweight/day

PNEC (Water)

PNEC aqua (freshwater)	0,0135 mg/l
PNEC aqua (marine water)	0,00135 mg/l

PNEC (Sediment)

PNEC sediment (freshwater)	1 mg/kg dwt
PNEC sediment (marine water)	0,1 mg/kg dwt

PNEC (Soil)

PNEC soil	0,8 mg/kg dwt
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PNEC (STP)

PNEC sewage treatment plant	3000 mg/l
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Safe handling : see section 7
Additional information : To date, no national critical limit values exist.

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

No additional information available

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:

Safety glasses (EN 166)

8.2.2.2. Skin protection

Skin and body protection:

Avoid contact with skin.

Hand protection:

Nitrile rubber gloves (thickness: 0.38mm)

8.2.2.3. Respiratory protection

Respiratory protection:

Not applicable

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Do not allow uncontrolled discharge of product into the environment.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Yellow.
Appearance	: as liquid.
Odour	: characteristic.
Odour threshold	: Inconclusive
Melting point	: Not available
Freezing point	: Not available
Boiling point	: like water
Flammability	: Not available
Explosive properties	: None.
Oxidising properties	: None.
Explosive limits	: Not available
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: 208 °C
pH	: ca. 5
Viscosity, kinematic	: ca. 111,111 mm ² /s
Viscosity, dynamic	: ca. 120 mPa·s BROOKFIELD RVF 1/20 @20°C
Solubility	: Soluble in water.
Partition coefficient n-octanol/water (Log Kow)	: See separate substances
Partition coefficient n-octanol/water (Log Pow)	: See separate substances
Vapour pressure	: like water
Vapour pressure at 50°C	: Not available
Density	: 1,08 kg/l @20°C
Relative density	: Not available
Relative vapour density at 20°C	: like water
Particle characteristics	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Relative evaporation rate (butylacetate=1)	: Not applicable
Relative evaporation rate (ether=1)	: Not applicable
Other properties	: No available data

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts with : Strong acids.

10.2. Chemical stability

SECTION 7: Handling and storage.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

SECTION 7: Handling and storage.

10.5. Incompatible materials

Strong acids. Materials that react violently or explosively with water.

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10.6. Hazardous decomposition products

On burning: release of (highly) toxic gases/vapours. Nitrogen oxides (NOx).

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

LD50 oral rat	2335 mg/kg
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Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
pH: ca. 5
Serious eye damage/irritation : Causes serious eye damage.
pH: ca. 5
Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)
Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)
Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)
STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)
STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)
Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

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Viscosity, kinematic	ca. 111,111 mm ² /s
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11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

11.2.2. Other information

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Harmful to aquatic life with long lasting effects.

1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

LC50 - Fish [1]	1,1 mg/l
EC50 - Crustacea [1]	1,9 mg/l
ErC50 algae	2,4 mg/l

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1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

NOEC (chronic)	0,135 mg/l
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12.2. Persistence and degradability

1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

Persistence and degradability	This surfactant complies with the biodegradability criteria as laid down in Regulation (EC) No.648/2004 on detergents.
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Biodegradation	86 % OECD 301D
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12.3. Bioaccumulative potential

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Partition coefficient n-octanol/water (Log Pow)	See separate substances
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Partition coefficient n-octanol/water (Log Kow)	See separate substances
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1-Propanaminium, 3-amino-N-(carboxymethyl)-N,N-dimethyl-, N-(C8-18(even numbered) and C18 unsaturated acyl) derivs., hydroxides, inner salts

Partition coefficient n-octanol/water (Log Pow)	4,2
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12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Exoquat PK47 (61789-40-0, 147170-44-3 (related CAS numbers))

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %.

12.7. Other adverse effects

Additional information : No other effects known

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional waste regulation : Waste disposal according to EC directives 75/442/EC, 91/689/EC and 2008/98/EC in the corresponding versions, covering waste and dangerous waste.

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. This material should not be landfilled or deep well injected as a method of disposal. Recycled/recovered. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber.

Ecology - waste materials : Avoid release to the environment.

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SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

14.1. UN number or ID number

UN-No. (ADR)	: Not applicable
UN-No. (IMDG)	: Not applicable
UN-No. (IATA)	: Not applicable
UN-No. (ADN)	: Not applicable
UN-No. (RID)	: Not applicable

14.2. UN proper shipping name

Proper Shipping Name (ADR)	: Not applicable
Proper Shipping Name (IMDG)	: Not applicable
Proper Shipping Name (IATA)	: Not applicable
Proper Shipping Name (ADN)	: Not applicable
Proper Shipping Name (RID)	: Not applicable

14.3. Transport hazard class(es)

ADR
Transport hazard class(es) (ADR) : Not applicable

IMDG
Transport hazard class(es) (IMDG) : Not applicable

IATA
Transport hazard class(es) (IATA) : Not applicable

ADN
Transport hazard class(es) (ADN) : Not applicable

RID
Transport hazard class(es) (RID) : Not applicable

14.4. Packing group

Packing group (ADR)	: Not applicable
Packing group (IMDG)	: Not applicable
Packing group (IATA)	: Not applicable
Packing group (ADN)	: Not applicable
Packing group (RID)	: Not applicable

14.5. Environmental hazards

Dangerous for the environment	: No
Marine pollutant	: No
Other information	: No supplementary information available

14.6. Special precautions for user

Overland transport

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

Inland waterway transport

Not applicable

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Rail transport

Not applicable

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Other information, restriction and prohibition regulations : according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EC) No. 453/2010. Labelling according to Regulation (EC) No. 1272/2008 [CLP]. Other regulations (EU). Not applicable.

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)	
Reference code	Applicable on
3(b)	Exoquat PK47
3(c)	Exoquat PK47

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List $\geq 0,1$ % / SCL

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.1.2. National regulations

To date, no national critical limit values exist.

Germany

Water hazard class (WGK) : WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1).
Storage class (LGK, TRGS 510) : LGK 12 - Non-combustible liquids.
Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

SZW-lijst van kankerverwekkende stoffen : None of the components are listed
SZW-lijst van mutagene stoffen : None of the components are listed
SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : None of the components are listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling : None of the components are listed

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Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Denmark

Danish National Regulations

: Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes			
Section	Changed item	Change	Comments
15.1	Additional information	Added	

Full text of H- and EUH-statements:	
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H412	Harmful to aquatic life with long lasting effects.

Full text of use descriptors	
ERC1	Manufacture of the substance
ERC2	Formulation into mixture
ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC8a	Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
PC1	Adhesives, sealants
PC11	Explosives
PC12	Fertilizers
PC13	Fuels
PC14	Metal surface treatment products
PC15	Non-metal-surface treatment products
PC16	Heat Transfer Fluids
PC17	Hydraulic Fluids
PC18	Ink and Toners
PC19	Intermediate
PC2	Adsorbents
PC20	Metal surface treatment products
PC21	Laboratory chemicals
PC23	Leather treatment products
PC24	Lubricants, greases, release products
PC25	Metal working fluids
PC26	Paper and board treatment products

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according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Full text of use descriptors	
PC27	Plant protection products
PC28	Perfumes, fragrances
PC29	Pharmaceuticals
PC3	Air care products
PC30	Photo-chemicals
PC31	Polishes and wax blends
PC32	Polymer preparations and compounds
PC33	Semiconductors
PC34	Textile dyes, and impregnating products
PC35	Washing and cleaning products
PC36	Water softeners
PC37	Water treatment chemicals
PC38	Welding and soldering products, flux products
PC39	Cosmetics, personal care products
PC4	Anti-Freeze and De-icing products
PC40	Extraction agents
PC7	Base metals and alloys
PC8	Biocidal products
PC9a	Coatings and paints, thinners, paint removers
PC9b	Fillers, putties, plasters, modelling clay
PC9c	Finger paints
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC12	Use of blowing agents in manufacture of foam
PROC13	Treatment of articles by dipping and pouring
PROC14	Tableting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC17	Lubrication at high energy conditions in metal working operations
PROC19	Manual activities involving hand contact
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC7	Industrial spraying

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Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Full text of use descriptors	
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU19	Building and construction work
SU21	Consumer uses: Private households (= general public = consumers)
SU22	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU3	Industrial uses: Uses of substances as such or in preparations at industrial sites
SU5	Manufacture of textiles, leather, fur
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
SU9	Manufacture of fine chemicals

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:		
Eye Dam. 1	H318	Calculation method
Aquatic Chronic 3	H412	Calculation method

Safety Data Sheet (SDS), EU

All recommendations for the use of our products, whether given by us, orally, or to be implied from data or test results obtained by us, are based on the current state of our knowledge at the time such recommendations are made. When additional information is obtained, these recommendations may be updated. They may also be influenced by circumstances outside our control. Notwithstanding such recommendations the user is responsible that the product as supplied by us, is suitable for the process or purpose he intends to use it. The user of the product is solely responsible for compliance with all laws and regulation applying to the use of the product. Since we cannot control the application, use or processing of the products, we do not accept responsibility therefore. The user shall ensure that the intended use of the products will not infringe in any party's intellectual property rights

Exoquat PK47

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Annex to the safety data sheet

Product exposure scenario(s)	
ES Type	ES title
Worker	Industrial manufacture of AAPB
Worker	Formulation and other industrial use
Worker	Professional use
Consumer	Consumer end-use of formulated products containing betaines

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

1. Exposure scenario 1.0

Industrial manufacture of AAPB

ES Ref.: 1.0
ES Type: Worker

Use descriptors	SU3, SU8, SU9 PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC15, PROC17, PROC19, PROC24 PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC9c, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC38, PC39, PC40 ERC1
Processes, tasks, activities covered	Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.1. Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC12, PROC13, PROC15, PROC17, PROC19, PROC24)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC12	Use of blowing agents in manufacture of foam
PROC13	Treatment of articles by dipping and pouring
PROC15	Use as laboratory reagent
PROC17	Lubrication at high energy conditions in metal working operations
PROC19	Manual activities involving hand contact
PROC24	High (mechanical) energy work-up of substances bound in /on materials and/or articles

Product characteristics

Physical form of product	Solid, Liquid
Concentration of substance in product	> 25 %
Dustiness	Solid, low dustiness

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Product characteristics	
Volatility	Liquid, Low : <0,031 kPa

Operational conditions		
Amounts used	Amounts used,(one worker)	30 t/day
	Emission days	30
Frequency and duration of use	Exposure duration,(one worker)	4 H/Day ECETOC TRA. Worst case assumption
	Exposure frequency,(one worker)	30 Day/Year Worst case assumption
Other given operational conditions affecting workers exposure	Respiration volume	10 m ³ /d ECETOC TRA. Default value
	Area of skin contact	1980 cm ² Worst case assumption
	bodyweight	70 kg ECETOC TRA. Default value
	Skin protection	Gloves. Effectiveness : 100%. Recommended material: Butyl rubber gloves. Nitrile rubber gloves. Breakthrough time (maximum wearing time) : > 480 min

Risk Management Measures		
Technical conditions and measures at process level (source) to prevent release	Containment : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Organisational measures to prevent/limit releases, dispersion and exposure	Good work practice : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Conditions and measures related to personal protection, hygiene and health evaluation	Type of PPE (gloves, respirator, faceshield, etc):	Applicability and effectiveness depends on process category and risk management target factor to be met.

Other risk management measures:		
Process category	Risk management target factors	
PROC 1	Not required.	
PROC 2	Not required.	
PROC 3	0,822672	
PROC 4	0,467809	
PROC 5	0,440656	
PROC 7	0,016263	

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Risk Management Measures		
PROC 8	0,220328	
PROC 9	0,467809	
PROC 10	Not required.	
PROC 12	Not required.	
PROC 13	0,220328	
PROC 15	0,493603	
PROC 17	0.096588	
PROC 19	Gloves. Effectiveness : 100%	
PROC 24	Not required.	
Exposure duration	1 - 4 hours	
Exposure duration	0,25 - 1 hours	
Exposure duration	< 0,25 hours	
Concentration:	5 - 25%	
Concentration:	1 - 5 %	
Concentration:	<1 %	
Local exhaust :	Effectiveness : 80 %	
Local exhaust :	Effectiveness : 90 %	
Local exhaust :	Effectiveness : 95 %	
Suitable respiratory protective equipment:	Effectiveness : 90 %	
Suitable respiratory protective equipment:	Effectiveness : 95 %	
The total risk reduction factor (TRRF) may not exceed the given risk management target factor. The total risk reduction factor can be calculated by multiplying the applicable risk reduction factors (RRF).		

2.2. Contributing scenario controlling environmental exposure

Product characteristics	
Physical form of product	Solid, Liquid
Concentration of substance in product	> 25 %
Dustiness	Solid, low dustiness
Volatility	Liquid, Low

Operational conditions		
Amounts used	Annual site tonnage	No data
Frequency and duration of use	Emission days	30
Other given operational conditions affecting environmental exposure	Fraction of applied amount lost from process/use to waste gas	Not applicable
	Fraction of applied amount lost from process/use to waste water	0 g/kg Recycled/recovered
	Fraction of applied amount lost from process/use to waste	Not applicable

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Operational conditions		
	Fraction consumed in process/use	0 g/kg
	Fraction of applied amount leaving the site with products	1

Risk Management Measures		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Onsite pre-treatment of waste water	Onsite wastewater treatment required
	Resulting fraction of initially applied amount in waste water released from site to the external sewage system	0 g/kg Recycled/recovered
	Air emission abatement	Not applicable
	Resulting fraction of applied amount in waste gas released to environment	Not applicable
	Onsite waste treatment	Not applicable
	Municipal or other type of external waste water treatment	Not applicable
	Effluent (of the waste water treatment plant) discharge rate	Not applicable
	Recovery of sludge for agriculture or horticulture	Not applicable
Conditions and measures related to sewage treatment plant	Not applicable	
Conditions and measures related to external treatment of waste for disposal	Not applicable	
Conditions and measures related to external recovery of waste	Not applicable	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	EUSES

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
Website	http://www.ecetoc.org/tra

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

4.2. Environment

Guidance - Environment	Not applicable
Website	http://tcsweb3.jrc.it/euses/

Additional good practice advice beyond the REACH CSA

No available data

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

1. Exposure scenario 2.0

Formulation and other industrial use

ES Ref.: 2.0
ES Type: Worker

Use descriptors	SU5, SU10, SU19 PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19 PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC9c, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC38, PC39, PC40 ERC2, ERC4
Processes, tasks, activities covered	Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.1. Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC6	Calendering operations
PROC7	Industrial spraying
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10	Roller application or brushing
PROC13	Treatment of articles by dipping and pouring
PROC14	Tabletting, compression, extrusion, pelettisation, granulation
PROC15	Use as laboratory reagent
PROC19	Manual activities involving hand contact

Product characteristics

Physical form of product	Solid, Liquid
Concentration of substance in product	> 25 % Worst case assumption
Dustiness	Solid, low dustiness
Volatility	Liquid, Low : <0,031 kPa

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Operational conditions		
Amounts used	Amounts used,(one worker)	> 6 t/day Worst case assumption
	Annual site tonnage	1800 T Worst case assumption
Frequency and duration of use	Exposure duration,(one worker)	> 4 H/Day Worst case assumption
	Exposure frequency,(one worker)	300 Day/Year Worst case assumption
	Emission days	300 Day/Year spERC AISE 7
Other given operational conditions affecting workers exposure	Respiration volume	10 m ³ /d ECETOC TRA. Default value
	Area of skin contact	1730 cm ² Worst case assumption
	bodyweight	70 kg ECETOC TRA. Default value
	Skin protection	Gloves. Effectiveness : 100%. Recommended material: Butyl rubber gloves. Nitrile rubber gloves. Breakthrough time (maximum wearing time) : > 480 min

Risk Management Measures		
Technical conditions and measures at process level (source) to prevent release	Containment : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Organisational measures to prevent/limit releases, dispersion and exposure	Good work practice : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Conditions and measures related to personal protection, hygiene and health evaluation	Type of PPE (gloves, respirator, faceshield, etc):	Applicability and effectiveness depends on process category and risk management target factor to be met.
Other risk management measures:		
Process category	Risk management target factors	
PROC 1	Not required.	
PROC 2	Not required.	
PROC 3	0,822672	
PROC 4	0,467809	
PROC 5	0,440656	
PROC 6	0,386352	
PROC 7	0,016263	

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Risk Management Measures		
PROC 8	0,220328	
PROC 9	0,467809	
PROC 10	Not required.	
PROC 13	0,220328	
PROC 14	0,481385	
PROC 15	0,493603	
PROC 19	Gloves. Effectiveness : 100%	
Exposure duration	1 - 4 hours	
Exposure duration	0,25 - 1 hours	
Exposure duration	< 0,25 hours	
Concentration:	5 - 25%	
Concentration:	1 - 5 %	
Concentration:	<1 %	
Local exhaust :	Effectiveness : 80 %	
Local exhaust :	Effectiveness : 90 %	
Local exhaust :	Effectiveness : 95 %	
Suitable respiratory protective equipment:	Effectiveness : 90 %	
Suitable respiratory protective equipment:	Effectiveness : 95 %	
The total risk reduction factor (TRRF) may not exceed the given risk management target factor. The total risk reduction factor can be calculated by multiplying the applicable risk reduction factors (RRF).		

2.2. Contributing scenario controlling environmental exposure

Product characteristics		
Physical form of product	Solid, Liquid	
Concentration of substance in product	> 25 % Worst case assumption	
Dustiness	Solid, low dustiness	
Volatility	Liquid, Low	

Operational conditions		
Amounts used	Annual site tonnage	1800 T Worst case assumption
Frequency and duration of use	Emission days	300 spERC AISE 7
Other given operational conditions affecting environmental exposure	Fraction of applied amount lost from process/use to waste gas	Not applicable
	Fraction of applied amount lost from process/use to waste water	0,1 g/kg spERC AISE 7
	Fraction of applied amount lost from process/use to waste	Not applicable

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Operational conditions		
	Fraction consumed in process/use	0 g/kg
	Fraction of applied amount leaving the site with products	1

Risk Management Measures		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Onsite pre-treatment of waste water	Not applicable
	Resulting fraction of initially applied amount in waste water released from site to the external sewage system	0,1 g/kg spERC AISE 7
	Air emission abatement	Not applicable
	Resulting fraction of applied amount in waste gas released to environment	Not applicable
	Onsite waste treatment	Not applicable
	Municipal or other type of external waste water treatment	
	Effluent (of the waste water treatment plant) discharge rate	2000 m ³ /d
	Recovery of sludge for agriculture or horticulture	
Conditions and measures related to sewage treatment plant	Release to municipal sewage treatment plant :	0,0006 t/day Worst case assumption
Conditions and measures related to external recovery of waste	Recovery of sludge for agriculture or horticulture	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	EUSES

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
Website	http://www.ecetoc.org/tra

4.2. Environment

Guidance - Environment	Not applicable
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Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Website	http://tcsweb3.jrc.it/euses/
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Additional good practice advice beyond the REACH CSA

No available data

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

1. Exposure scenario 3.0

Professional use

ES Ref.: 3.0
ES Type: Worker

Use descriptors	SU22 PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19 PC1, PC2, PC3, PC4, PC7, PC8, PC9a, PC9b, PC9c, PC11, PC12, PC13, PC14, PC15, PC16, PC17, PC18, PC19, PC20, PC21, PC23, PC24, PC25, PC26, PC27, PC28, PC29, PC30, PC31, PC32, PC33, PC34, PC35, PC36, PC37, PC38, PC39, PC40 ERC8a
Processes, tasks, activities covered	Use at industrial sites (IS)
Assessment method	Used ECETOC TRA model

2. Operational conditions and risk management measures

2.1. Contributing scenario controlling worker exposure (PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19)

PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2	Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3	Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4	Chemical production where opportunity for exposure arises
PROC5	Mixing or blending in batch processes
PROC8a	Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b	Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC10	Roller application or brushing
PROC11	Non industrial spraying
PROC13	Treatment of articles by dipping and pouring
PROC15	Use as laboratory reagent
PROC19	Manual activities involving hand contact

Product characteristics

Physical form of product	Solid, Liquid
Concentration of substance in product	> 25 % Worst case assumption
Dustiness	Solid, low dustiness
Volatility	Liquid, Low : <0,031 kPa

Operational conditions

Amounts used	Amounts used,(one worker)	0,0016 t/day Worst case assumption
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Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Operational conditions		
	Annual site tonnage	0,482 T Worst case assumption
Frequency and duration of use	Exposure duration,(one worker)	> 4 H/Day Worst case assumption
	Exposure frequency,(one worker)	300 Day/Year Worst case assumption
	Emission days	365 Day/Year EUSES/ECHA R16
Other given operational conditions affecting workers exposure	Respiration volume	10 m ³ /d ECETOC TRA. Default value
	Area of skin contact	1730 cm ² Worst case assumption
	bodyweight	70 kg ECETOC TRA. Default value
	Skin protection	Gloves. Effectiveness : 100%. Recommended material: Butyl rubber gloves. Nitrile rubber gloves. Breakthrough time (maximum wearing time) : > 480 min

Risk Management Measures		
Technical conditions and measures at process level (source) to prevent release	Containment : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Organisational measures to prevent/limit releases, dispersion and exposure	Good work practice : Required	Applicability and effectiveness depends on process category and risk management target factor to be met.
Conditions and measures related to personal protection, hygiene and health evaluation	Type of PPE (gloves, respirator, faceshield, etc):	Applicability and effectiveness depends on process category and risk management target factor to be met.

Other risk management measures:		
Process category	Risk management target factors	
PROC 1	Not required.	
PROC 2	0,489531	
PROC 3	0,822672	
PROC 4	0,233904	
PROC 5	0,220328	
PROC 8	0,088131	
PROC 10	Not required.	
PROC 11	0,003535	

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Risk Management Measures		
PROC 13	0,220328	
PROC 15	0,493603	
PROC 19	Reduction of potentially exposed skin surface.	
Exposure duration	1 - 4 hours	
Exposure duration	0,25 - 1 hours	
Exposure duration	< 0,25 hours	
Concentration:	5 - 25%	
Concentration:	1 - 5 %	
Concentration:	<1 %	
Local exhaust :	Effectiveness : 80 %	
Local exhaust :	Effectiveness : 90 %	
Local exhaust :	Effectiveness : 95 %	
Suitable respiratory protective equipment:	Effectiveness : 90 %	
Suitable respiratory protective equipment:	Effectiveness : 95 %	
The total risk reduction factor (TRRF) may not exceed the given risk management target factor. The total risk reduction factor can be calculated by multiplying the applicable risk reduction factors (RRF).	Exposure duration (1-4 h) 0,6 x Concentration (1-5%) 0,2 = 0,12 TRRF 0,12 TTRF < Risk management target factors	

2.2. Contributing scenario controlling environmental exposure

Product characteristics	
Physical form of product	Solid, Liquid
Concentration of substance in product	> 25 %
	Worst case assumption
Dustiness	Solid, low dustiness
Volatility	Liquid, Low

Operational conditions		
Amounts used	Annual site tonnage	0,482 T Worst case assumption
Frequency and duration of use	Emission days	300 Worst case assumption
Other given operational conditions affecting environmental exposure	Fraction of applied amount lost from process/use to waste gas	Not applicable
	Fraction of applied amount lost from process/use to waste water	1 g/kg EUSES/ECHA R16
	Fraction of applied amount lost from process/use to waste	Not applicable

Risk Management Measures		
	Onsite pre-treatment of waste water	Not applicable

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Risk Management Measures		
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Resulting fraction of initially applied amount in waste water released from site to the external sewage system	1 EUSES/ECHA R16
	Air emission abatement	Not applicable
	Resulting fraction of applied amount in waste gas released to environment	Not applicable
	Onsite waste treatment	Not applicable
	Municipal or other type of external waste water treatment	
	Effluent (of the waste water treatment plant) discharge rate	2000 m ³ /d EUSES/ECHA R16
	Recovery of sludge for agriculture or horticulture	
Conditions and measures related to sewage treatment plant	Release to municipal sewage treatment plant :	0,0000132 t/day Worst case assumption
Conditions and measures related to external recovery of waste	Recovery of sludge for agriculture or horticulture	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

3.2. Environment

Information for contributing exposure scenario	
2.2	Used ECETOC TRA model

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
Website	http://www.ecetoc.org/tra

4.2. Environment

Guidance - Environment	Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
Website	http://tcsweb3.jrc.it/euses/

Additional good practice advice beyond the REACH CSA

No available data

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

1. Exposure scenario 4.0

Consumer end-use of formulated products containing betaines

ES Ref.: 4.0
ES Type: Consumer

Use descriptors	SU21 PC1, PC3, PC8, PC31, PC35, PC39 ERC8a
Processes, tasks, activities covered	Consumer use (C)

2. Operational conditions and risk management measures

2.1.1. Contributing scenario consumer end-use (PC1)

PC1	Adhesives, sealants
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Product characteristics

Physical form of product	Solid, Liquid
Concentration of substance in product	Concentration of substance in product : 2 - 5 %
Dustiness	Solid, low dustiness
Volatility	Liquid, Low (<0.031 kPa)

Operational conditions

Amounts used	Regional use tonnage	965 T Data provided by industry
	Daily amount used per capita	0,132 g TGD Default value
	Emission days	365 TGD Default value
	For each use event, covers use amounts up to :	0,001 - 750 g Data provided by industry and/or ECETOC default values
Frequency and duration of use	uses per day	0,003 - 1 Data provided by industry and/or ECETOC default values
	Exposure duration	4 - 6 H/Day Data provided by industry and/or ECETOC default values
Other given operational conditions affecting consumers exposure	Respiration volume	13- 20 m ³ /d Data provided by industry and/or ECETOC default values
	Area of direct skin contact	2082,5 cm ² AISE REACT Worst case assumption
	Area of indirect skin contact	17600 cm ² HERA Assessment method
	bodyweight	60 kg AISE REACT & ECETOC TRA. Default value

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Risk Management Measures		
Conditions and measures related to information and behavioural advice to consumers	Not required	
Conditions and measures related to personal protection, hygiene and health evaluation	Not required	

2.1.2. Contributing scenario consumer end-use (PC3)

PC3	Air care products
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Product characteristics	
Physical form of product	Solid, Liquid
Concentration of substance in product	Concentration of substance in product : max 2 %
Dustiness	Solid, low dustiness
Volatility	Liquid, Low (<0.031 kPa)

Operational conditions		
Amounts used	Regional use tonnage	965 T Data provided by industry
	Daily amount used per capita	0,132 g TGD Default value
	Emission days	365 TGD Default value
	For each use event, covers use amounts up to :	0.0000144- 0,2 g Data provided by industry. ECETOC TRA & AISE C17-C18. Default value
Frequency and duration of use	uses per day	1- 4 Data provided by industry. ECETOC TRA & AISE C17-C18. Default value
	Exposure duration	0.0083- 4 H/Day Data provided by industry. ECETOC TRA & AISE C17-C18. Default value
Other given operational conditions affecting consumers exposure	Respiration volume	13- 33 m ³ /d Data provided by industry. ECETOC TRA & AISE C17-C18. Default value
	Area of direct skin contact	2082,5 cm ² AISE REACT Worst case assumption
	Area of indirect skin contact	17600 cm ² HERA Assessment method
	bodyweight	60 kg AISE REACT & ECETOC TRA. Default value

Risk Management Measures		
Conditions and measures related to information and behavioural advice to consumers	Not required	

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Risk Management Measures		
Conditions and measures related to personal protection, hygiene and health evaluation	Not required	

2.1.3. Contributing scenario consumer end-use (PC8)

PC8	Biocidal products
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Product characteristics	
Physical form of product	Solid, Liquid
Concentration of substance in product	Concentration of substance in product : max 0,005 %
Dustiness	Solid, low dustiness
Volatility	Liquid, Low (<0.031 kPa)

Operational conditions		
Amounts used	Regional use tonnage	965 T Data provided by industry
	Daily amount used per capita	0,132 g TGD Default value
	Emission days	365 TGD Default value
	For each use event, covers use amounts up to :	0.00005- 0,0015 g Data provided by industry
Frequency and duration of use	uses per day	≤ 0,4 Data provided by industry
	Exposure duration	0,1 - 0,25 H/Day Data provided by industry
Other given operational conditions affecting consumers exposure	Respiration volume	20 m ³ /d Data provided by industry and/or ECETOC default values
	Area of direct skin contact	2082,5 cm ² AISE REACT Worst case assumption
	Area of indirect skin contact	17600 cm ² HERA Assessment method
	bodyweight	60 kg AISE REACT & ECETOC TRA. Default value

Risk Management Measures		
Conditions and measures related to information and behavioural advice to consumers	Not required	
Conditions and measures related to personal protection, hygiene and health evaluation	Not required	

2.1.4. Contributing scenario consumer end-use (PC31)

PC31	Polishes and wax blends
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Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Product characteristics	
Physical form of product	Solid, Liquid
Concentration of substance in product	Concentration of substance in product : max 2 %
Dustiness	Solid, low dustiness
Volatility	Liquid, Low (<0.031 kPa)

Operational conditions		
Amounts used	Regional use tonnage	965 T Data provided by industry
	Daily amount used per capita	0,132 g TGD Default value
	Emission days	365 TGD Default value
	For each use event, covers use amounts up to :	0,0004 - 10 g Data provided by industry. ECETOC TRA & AISE C20. Default value
Frequency and duration of use	uses per day	0,003- 1 Data provided by industry. ECETOC TRA & AISE C20 Default value
	Exposure duration	0,1 - 4 H/Day Data provided by industry. ECETOC TRA & AISE C20 Default value
Other given operational conditions affecting consumers exposure	Respiration volume	20 - 33 m ³ /d Data provided by industry. ECETOC TRA & AISE C20 Default value
	Area of direct skin contact	2082,5 cm ² AISE REACT Worst case assumption
	Area of indirect skin contact	17600 cm ² HERA Assessment method
	bodyweight	60 kg AISE REACT & ECETOC TRA. Default value

Risk Management Measures		
Conditions and measures related to information and behavioural advice to consumers	Not required	
Conditions and measures related to personal protection, hygiene and health evaluation	Not required	

2.1.5. Contributing scenario consumer end-use (PC35)

PC35	Washing and cleaning products
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Product characteristics	
Physical form of product	Solid, Liquid

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Product characteristics	
Concentration of substance in product	Concentration of substance in product : 2 - 20 %, Concentration after dilution for use : 0.02 - 15 %
Dustiness	Solid, low dustiness
Volatility	Liquid, Low (<0.031 kPa)

Operational conditions		
Amounts used	Regional use tonnage	965 T Data provided by industry
	Daily amount used per capita	0,132 g TGD Default value
	Emission days	365 TGD Default value
	For each use event, covers use amounts up to :	0,0025 - 29 g Data provided by industry. ECETOC TRA & AISE C1-C7, C12, C15. Default value
Frequency and duration of use	uses per day	0,3 - 3 Data provided by industry. ECETOC TRA & AISE C1-C7, C12, C15 Default value
	Exposure duration	0,167 - 4 H/Day Data provided by industry. ECETOC TRA & AISE C1-C7, C12, C15 Default value
Other given operational conditions affecting consumers exposure	Respiration volume	20 - 33 m ³ /d Data provided by industry. ECETOC TRA & AISE C1-C7, C12, C15. Default value
	Area of direct skin contact	2082,5 cm ² AISE REACT Worst case assumption
	Area of indirect skin contact	17600 cm ² HERA Assessment method
	bodyweight	60 kg AISE REACT & ECETOC TRA. Default value

Risk Management Measures		
Conditions and measures related to information and behavioural advice to consumers	Not required	
Conditions and measures related to personal protection, hygiene and health evaluation	Not required	

3. Exposure estimation and reference to its source

3.1. Health

Information for contributing exposure scenario	
2.1.1	ECETOC TRA consumer v3
2.1.2	ECETOC TRA consumer v3

Exoquat PK47

Annex to the safety data sheet: Exposure scenario

CAS-No.: 61789-40-0, 147170-44-3 (related CAS numbers) Product form: Mixture Physical state: Liquid

Information for contributing exposure scenario

2.1.3	ECETOC TRA consumer v3
2.1.4	ECETOC TRA consumer v3
2.1.5	ECETOC TRA consumer v3

3.2. Environment

No available data

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

4.1. Health

Guidance - Health	Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels
Website	http://www.ecetoc.org/tra

4.2. Environment

Guidance - Environment	Not applicable for wide dispersive uses
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Additional good practice advice beyond the REACH CSA

No available data