

Material Safety Data Sheet

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

1.1. Product identifier

Product Number: DB1015
Product Name: DET&RINSE PLUS

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

Identified use(s): ALKALINE DETERGENT FOR OVENS
Sector of use: SU 22 – PROFESSIONAL USE
Product category/subcategory: PC35 – PRODUCT FOR WASHING AND CLEANING (SOLVENT BASED PRODUCT)
Environmental release category: ERC8a
Uses advised against: ANY USE THAT IS NOT DESCRIBED IN THIS SHEET AND IN THE TECHNICAL DOCUMENTATION IS TO BE CONSIDERED INCORRECT/NOT RECOMMENDED

1.3. Details of the supplier of the safety data sheet

Name: UNOX S.p.A.
Full address: VIA MAJORANA, 22
District and Country: 35010 CADONEGHE (PD)
ITALIA
tel. +39 049 86.57.511
fax +39 049 86.57.555

e-mail address of the competent person,
responsible for the Safety Data Sheet
Product distributed by:

Det&Rinse@unox.it
Unox s.p.a.

1.4. Emergency telephone numbers

For urgent inquiries refer to
MILANO (CAV Ospedale Niguarda Cà Granda): Tel. +39 02.66101029
NAPOLI (CAV Ospedale Cardarelli): Tel. +39 081.7472870
ROMA (CAV Policlinico Gemelli): Tel. +39 06.3054343
ROMA (CAV Policlinico Umberto I): Tel. +39 06.49978000
PAVIA (CAV IRCCS Fondazione Maugeri): Tel. +39 0382.24444
BERGAMO (CAV Ospedali Riuniti): Tel. +39 800.883300
FIRENZE (CAV Ospedale Careggi): Tel. +39 055.7947819

SECTION 2. Hazards identification.

2.1. Classification of the substance or mixture.

The product is classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of EC Regulation 1907/2006 and subsequent amendments. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

2.1.1. Regulation 1272/2008 (CLP) and following amendments and adjustments.

Hazard classification and indication:

Met. Corr. 1 H290
Skin Corr. 1A H314
Eye Dam. 1 H318

2.1.2. 67/548/EEC and 1999/45/EC Directives and following amendments and adjustments.

Danger Symbols:

C

R phrases:

35

The full wording of the Risk (R) and hazard (H) phrases is given in section 16 of the sheet.

2.2. Label elements.

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: Danger

Hazard statements:

H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements:

P264 Wash hands thoroughly after handling
P280 Wear protective gloves / protective clothing / eye protection / face protection.
P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN (or hair): Remove / Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor / physician.

Contains: POTASSIUM HYDROXIDE
 D-GLUCOPYRANOSE, OLIGOMER C8-C10 ALKYL GLUCOSIDE

2.3. Other hazards.

The product does not contain substances PBT or vPvB according to Regulation (EC) N. 1907/2006, Annex XIII.

SECTION 3. Composition/information on ingredients.

3.1. Substances.

Information not relevant.

3.2. Mixtures.

Contains:

Identification.	Conc. %.	Classification 67/548/CEE.	Classification 1272/2008 (CLP).
DI(PROPYLENE GLYCOL) METHYL ETHER			
CAS. 34590-94-8	5 - 15	Substance with limited exposition in the work place.	
CE. 252-104-2			

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Reg. no. 01-2119450011-60-xxxx

POTASSIUM HYDROXIDE

CAS. 1310-58-3

5 - 15

C R35, Xn R22

Met. Corr. 1 H290, Acute Tox. 4 H302, Skin Corr. 1A H314

CE. 215-181-3

INDEX. 019-002-00-8

Reg. no. 01-2119487136-33-xxxx

D-GLUCOPYRANOSE, OLIGOMER C8-C10**ALKYL GLUCOSIDE**

CAS. 68515-73-1

5 - 15

Xi R41

Eye Dam. 1 H318

CE. 500-220-1

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Reg. no. 01-2119488530-36-xxxx

ALCOHOLS C6-12, ETHOXYLATES,**PROPOXYLATES**

CAS. 68937-66-6

1 - 4

Xi R41

Eye Dam. 1 H318

CE. -

INDEX. -

Reg. no. Non pertinente (polimero)

ALCILIC ETHER OF CARBOXYLIC ACID

CAS. -

1 - 4

Xi R38, Xi R41

Eye Dam. 1 H318, Skin Irrit. 2 H315

CE. polymer

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Reg. no. polymer

SODIUM 2-ETHYLHEXYL SULFATE

CAS. 126-92-1

0 - 1

Xi R38, Xi R41

Eye Dam. 1 H318, Skin Irrit. 2 H315

CE. 204-812-8

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ALKYL SEC SULFONATE C14-17 - SODIUM**SALT**

CAS. 97489-15-1

0 - 1

Xn R22, Xi R38, Xi R41

Acute Tox. 4 H302, Eye Dam. 1 H318, Skin Irrit. 2 H315

CE. 307-055-2

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Reg. no. 01-2119489924-20-0000; 01-2119489924-20-0001

T+ = Very Toxic(T+), T = Toxic(T), Xn = Harmful(Xn), C = Corrosive(C), Xi = Irritant(Xi), O = Oxidizing(O), E = Explosive(E), F+ = Extremely Flammable(F+), F = Highly Flammable(F), N = Dangerous for the Environment(N)
The full wording of the Risk (R) and hazard (H) phrases is given in section 16 of the sheet.

SECTION 4. First aid measures.**4.1. Description of first aid measures.**

Adopt the following general measures:

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

SKIN remove contaminated clothing immediately and take a shower. Wash contaminated clothing separately before reuse.

INHALATION: Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

INGESTION: get medical advice immediately. Never give anything by mouth to an unconscious person unless authorized by a doctor. Do not induce

vomiting unless expressly authorized by a doctor.

PROTECTION OF RESCUERS: do not take any action that may involve any personal risk or without having received suitable training. Perform mouth-to-mouth can be dangerous to the rescuer. If there has been a substantial leakage the rescuer should wear protective gloves and prudently closed working clothes.

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

INGESTION: burns to mouth, throat, esophagus. It can cause internal perforation.

EYE CONTACT: severe eye damages, it causes corneal opacity, iris lesions and irreversible eye discoloration.

SKIN CONTACT: severe burns and blistering of the skin that can appear after exposure. Burns cause pain.

INHALATION: vapors are caustic for the respiratory tract and may cause pulmonary edema, whose symptoms sometimes arise after some hours.

For more details see Section 11.

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

In case of health disorder seek medical advice and follow his directions. Do not give anything by mouth to an unconscious person. Always seek medical advice in case of doubt or when symptoms may arise even where not provided. Speaking with a doctor keep available the material safety data sheet or failing this, the label. In case of inhalation of decomposition products in a fire symptoms may be delayed. Keep the exposed person under medical surveillance for 48 hours.

SECTION 5. Firefighting measures.

5.1. Extinguishing media.

SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

UNSUITABLE EXTINGUISHING EQUIPMENT

None in particular

5.2. Special hazards arising from the substance or mixture.

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Combustion may lead to the formation of dangerous gases and/or vapours. Exposure to the decomposition compounds may lead to health damage. Do not breathe the combustion products.

5.3. Advice for firefighters.

GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

SECTION 6. Accidental release measures.

6.1. Personal precautions, protective equipment and emergency procedures.

FOR THOSE WHO DO NOT DIRECTLY INTERVENE: leave the area surrounding the spill or release. Do not smoke. Remove all sources of ignition (cigarettes, flames, sparks, etc.). Provide adequate ventilation. If vapors, dusts, fumes and aerosols form use respiratory protection. Consult an expert.

FOR THOSE WHO DIRECTLY INTERVENE: eliminate all sources of ignition (cigarettes, flames, sparks, etc.) from the area where the loss occurred. In the case of solid product prevent the formation of dust spraying the product with water if there are no contraindications. In case of dust dispersed in air or fumes use respiratory protection. Stop leakages if it is not dangerous. Do not handle damaged containers or spilled material unless wearing gloves and protective clothing. Refer to protective equipment recommended in Section 8. Provide adequate ventilation. Do not smoke. Evacuate persons not

adequately equipped. Consult an expert.

6.2. Environmental precautions.

The product must not penetrate into the sewer system or come into contact with surface water or ground water. If the product has escaped into a water course, into a drainage system, or has contaminated the ground or vegetation, notify the competent authorities immediately.

6.3. Methods and material for containment and cleaning up.

In case of:

<i>Recovery</i>	Recover most of the material. Absorb with a rag or inert material (sand, vermiculite, diatomaceous earth, Kieselguhr, etc.). Place contaminated material in an appropriate container labeled and separated from other waste. Do not dispose of into drains. Disposal of contaminated material must be made in accordance with the provisions of Section 13. The solutions with alkaline pH must be neutralized before being sent to disposal.
<i>Neutralization</i>	Use diluted and weak acids; avoid the use of strong and / or concentrated acids.
<i>Cleaning/Decontamination</i>	Wash non-recoverable residues with plenty of water.

LARGE SPILL

Contain the spill. If possible, cover drains and prevent the product flow into drains.

<i>Recovery</i>	Draw product into a suitable container (made of material compatible with the product) and soak up any leaked product with absorbent inert material (sand, vermiculite, diatomaceous earth, Kieselguhr, etc.). Collect as much of the remaining material with non-sparking tools and place into a suitable labeled container and separated from other waste. Do not dispose of into drains. Disposal of contaminated material must be made in accordance with the provisions of Section 13. The solutions with alkaline pH must be neutralized before being sent to disposal.
<i>Neutralization</i>	Use diluted and weak acids; avoid the use of strong and / or concentrated acids.
<i>Cleaning/Decontamination</i>	Wash non-recoverable residues with plenty of water.

6.4. Reference to other sections.

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage.

7.1 Precautions for safe handling.

The staff handling chemicals should be instructed about the specific risks and the preventive and protective measures, even to cope with any emergency, pursuant to local regulations and laws. Handle the product after having consulted all other sections of this MSDS.

Fire prevention measures

Perform manipulation in a place equipped with the fire-fighting measures described in section 5.

Incompatible substances or mixtures

Do not handle with incompatible materials and do not manipulate with objects that come into contact or which may come into contact with incompatible materials (for a list of incompatible materials see sub-section 10.5).

Measures for environmental protection

Avoid spills. If you can handle the product away from drains or after taking appropriate measures (coverage). Any spills on the floor can make it slippery. Confining the washing water, avoiding contamination of drains, surface water, groundwater (risk of environmental contamination).

Advice on general occupational hygiene

Wear protective equipment specified in section 8. Avoid contact with skin, eyes and clothing. Do not breathe any vapors or mists. Avoid spills and improper handling that can cause leakage. Do not eat, drink or smoke while using the product. Wash hands, forearms and face after using the product. Remove contaminated clothing and protective equipment before entering areas in which food is consumed.

7.2. Conditions for safe storage, including any incompatibilities.

Requirements for storage rooms and storage conditions

Store the product in a place equipped with the fire-fighting measures described in section 5. Keep away from food, drink and animal feed. Store the product in closed, labeled containers, away from heat and open flame in a well-ventilated area with temperatures between +5 °C and +40°C. Do not store with incompatible materials (for a list of incompatible materials see sub-section 10.5). For any other conditions to be avoided refer to sub-section 10.4. Protect against solar radiation and the action of heat. Keep away from flammable substances. Ensure adequate supply of water to extinguish. Make sure

there is adequate ventilation is using mechanical ventilation. Transport must be guaranteed in a workman like manner according to the height of the stack, the insurance of the containers to prevent them from falling and to mark them according to rules. Tanks and containers shall be equipped with waterproof containment tank built with suitable materials. The containers with incompatible chemicals must be spaced and equipped with separate containment tanks.

Requirements for storage containers and materials in contact

For transport, storage, handling and storage tanks use suitable materials only. Close tight the container after use.

Compatible materials:

Plastics: polyethylene, polypropylene, polyvinylchloride (PVC), Teflon, neoprene

Metals: stainless steel (AISI302, AISI304L, AISI316L, AISI440), Hastelloy C.

Incompatible materials:

Plastics: acetalic resins, polycarbonate

Metals: galvanized surfaces, carbon steel, iron, bronze, brass, aluminum and its alloys.

Given the wide variety of available material, the list of compatible materials is indicative. Always check the compatibility of materials of tanks, containers, piping, pumps, valves, measurements and control instruments, seals before using the product.

7.3. Specific end use(s).

ALKALINE DETERGENT FOR OVENS.

SECTION 8. Exposure controls/personal protection

8.1. Control parameters.

Regulatory References:

Italy	Decreto Legislativo 9 Aprile 2008, n.81.
Switzerland	Valeurs limites d'exposition aux postes de travail 2012.
OEL EU	Directive 2009/161/UE; Directive 2006/15/CE; Directive 2004/37/CE; Directive 2000/39/CE.
TLV-ACGIH	ACGIH 2012

DI(PROPYLENE GLYCOL) METHYL ETHER

Threshold Limit Value.

Type	Country	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
OEL	EU	308	50			SKIN
TLV	I	308	50			SKIN
TLV-ACGIH		606	100	909 (C)	150 (C)	

Predicted no-effect concentration - PNEC.

Reference value for land	2,74	mg/kg
Reference value for fresh water	19	mg/l
Reference value for water, intermittent release	190	mg/l
Reference value for sea water	1,9	mg/l
Reference value for sediment in fresh water	70,2	mg/kg
Reference value for sediment in sea water	7,02	mg/kg
Reference value for STP microorganisms	4168	mg/l

Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers.			Effects on workers			Chronic local	Chronic systemic
	Acute local	Acute systemic	Chronic local	Acute local	Acute systemic	Chronic local		
Inhalation.			VND	37,2 mg/m3		VND	310 mg/m3	
Dermal.			VND	15 mg/kg/d		VND	65 mg/kg/d	

POTASSIUM HYDROXIDE

Threshold Limit Value.

Type	Country	TWA/8h mg/m3	ppm	STEL/15min mg/m3	ppm			
TLV-ACGIH				2 (C)				
Health - Derived no-effect level - DNEL / DMEL								
Route of exposure	Effects on consumers. Acute local	Acute systemic	Chronic local	Chronic systemic	Effects on workers Acute local	Acute systemic	Chronic local	Chronic systemic
Oral.								
Inhalation			1 mg/m3	VND			1 mg/m3	VND
D-GLUCOPYRANOSE, OLIGOMER C8-C10 ALKYL GLUCOSIDE								
Predicted no-effect concentration - PNEC.								
Reference value for land				0,654			mg/kg	
Reference value for fresh water				0,1			mg/l	
Reference value for water, intermittent release				0,27			mg/l	
Reference value for sea water				0,01			mg/l	
Reference value for sediment in fresh water				0,487			mg/kg	
Reference value for sediment in sea water				0,048			mg/kg	
Reference value for STP microorganisms				560			mg/l	
Health - Derived no-effect level - DNEL / DMEL								
Route of exposure	Effects on consumers. Acute local	Acute systemic	Chronic local	Chronic systemic	Effects on workers Acute local	Acute systemic	Chronic local	Chronic systemic
Oral.			37,5 mg/kg/d	VND				
Inhalation			VND	420 mg/m3				
Dermal			VND	357000 mg/kg/d			VND	595000 mg/kg/d
SODIUM 2-ETHYLHEXYL SULFATE								
Predicted no-effect concentration - PNEC.								
Reference value for land				0,047			mg/kg	
Reference value for fresh water				0,017			mg/l	
Reference value for sea water				0,0014			mg/l	
Reference value for sediment in fresh water				0,28			mg/kg	
Reference value for sediment in sea water				0,028			mg/kg	
Reference value for STP microorganisms				10			mg/l	
Health - Derived no-effect level - DNEL / DMEL								
Route of exposure	Effects on consumers. Acute local	Acute systemic	Chronic local	Chronic systemic	Effects on workers Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation	106,4 mg/m3	VND	53,2 mg/m3	2,3 mg/m3			VND	53,2 mg/m3
Dermal.			VND	11,4 mg/kg			VND	23 mg/kg
ALKYL SEC SULFONATE C14-17 - SODIUM SALT								
Predicted no-effect concentration - PNEC.								
Reference value for the food chain (secondary poisoning)				53,3			mg/kg	
Reference value for land				9,4			mg/kg	
Reference value for fresh water				0,04			mg/l	
Reference value for water, intermittent release				0,06			mg/l	
Reference value for sea water				0,004			mg/l	
Reference value for sediment in fresh water				9,4			mg/kg	
Reference value for sediment in sea water				0,94			mg/kg	
Reference value for STP microorganisms				600			mg/l	
Health - Derived no-effect level - DNEL / DMEL								
Route of exposure	Effects on consumers. Acute local	Acute systemic	Chronic local	Chronic systemic	Effects on workers Acute local	Acute systemic	Chronic local	Chronic systemic
Oral			VND	7,1 mg/kg/d				
Inhalation.			VND	12,4 mg/m3			VND	35 mg/m3

Dermal. VND 3,57 mg/kg/d 2,8 mg/cm2 VND 2,8 mg/cm2 VND

Legend:

(C) = CEILING ; INALAB = Inhalable Fraction ; RESPIR = Respirable Fraction ; TORAC = Thoracic Fraction.
VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

8.2. Exposure controls.

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.

If these steps do not keep the concentration of the product below the exposure limit values in the workplace, wear suitable protection for the respiratory tract. During the use of the product refer to the label for hazards and other details. Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station

HAND PROTECTION

Protect hands with gloves suitable for chemicals category III (ref. Directive 89/686/EEC and standard EN 374 or other local regulation). Final selection of glove material the following aspects must be considered: degradation, breakage times and permeation. In the case of mixtures the resistance of protective gloves should be checked before use, as it can be unpredictable. Gloves have a time limit which depends on the exposure duration.

Suitable gloves for continuous and accidental contact:

Material: PVC, nitrile, natural rubber

Penetration time: > 240 minutes

Protection level: >5

EYES PROTECTION

Protect eyes with air tight goggles (ref standard EN 166). Provide an eye wash.

SKIN PROTECTION

Wear working clothes with long sleeves and safety shoes for professional use category III (ref. Directive 89/686/EEC and standard EN 344). Wash with soap and water after removing protective clothing. Provide an emergency shower.

RESPIRATORY PROTECTION

In case of exceeding the threshold value (es. TLV-TWA) of one or more of the substances present in the product, referring to daily exposure in the workplace or to a fraction established by the company's prevention and protection service, wear a mask with filter type ABEK the class 2 (rif. EN 14387). In the event in which gases or vapors of a different nature and/or gases or vapors with particles (aerosol, smoke, fog, etc.) a combined filter type must be used.

The use of respiratory protective equipment, such as masks of the type described above, it is necessary in the absence of technical measures to limit worker exposure. The protection provided by masks is in any case limited.

In the case in which the substance in question is odorless or its olfactory threshold is higher than the relative exposure limit and in case of emergency, or when exposure levels are unknown or the concentration of oxygen in the workplace is less than 17% volume, wear a compressed air breathing apparatus open circuit (ref. standard EN 137) or fresh air hose breathing apparatus for use with full face mask, half mask or mouthpiece (ref. standard EN 138).

SECTION 9. Physical and chemical properties.**9.1. Information on basic physical and chemical properties.**

State	liquid
Colour	pale yellow
Odour	typical
Odour threshold	N.A.
pH.	14
Melting or freezing point	<0°C
Initial boiling point	105 °C
Boiling range	105 °C – 110 °C
Flash point	> 60 °C.
Evaporation rate	N.A.
Flammability of solids and gasses	Not flammable.
Lower flammability limit	Not flammable.
Upper flammability limit	Not flammable.
Lower explosive limit	Not explosive.
Upper explosivity limit	Not explosive.
Vapour pressure	N.A.
Vapours density	N.A.

Specific weight.	1,1 – 1,25 Kg/l
Solubility	Water soluble
Partition coefficient: n-octanol/water	N.A.
Decomposition temperature	N.A.
Viscosity	>200 °C
Explosive properties	1 - 50 mPa.s
Oxidizing properties	Not oxidizing.

9.2. Other information.

VOC (Directive 1999/13/CE):	6,0 %
VOC (volatile carbon):	3,4 %

SECTION 10. Stability and reactivity.**10.1. Reactivity.**

The product is alkaline and it reacts violently with strong and/or concentrated acids.
The product contains DI(PROPYLENE GLYCOL) METHYL ETHER and it can react with oxidizing agents.

10.2. Chemical stability.

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions.

No hazardous reactions are foreseeable in normal conditions of use and storage.

10.4. Conditions to avoid.

Avoid contact with strong and/or concentrated acids and strong oxidizing agents.

10.5. Incompatible materials.

Concentrated acids and oxidizing agents. See also Section 7.

10.6. Hazardous decomposition products.

In the event of a fire gases or vapors that are potential health hazards may be released (carbon oxides, nitrogen oxides, phosphorous oxides, sulfur oxides, pyrolytic products).

SECTION 11. Toxicological information.**11.1. Information on toxicological effects.**

In the absence of experimental toxicological data on the product itself, the possible health hazards of the product were evaluated based on the properties of substances, according to the criteria laid down by the relevant legislation for the classification. Consider, therefore, the concentration of each substance dangerous possibly mentioned in Section 3, to assess toxicological effects resulting from exposure to the product.

a	Acute toxicity	Not applicable.
b	Irritation	Not applicable.
c	Corrosivity / Serious eye damages	The product causes severe skin burns and eye damages.
d	Sensitization	Not applicable.
e	Toxicity for repeated doses	Not applicable.
f	Cancerogenicity	Not applicable.
g	Mutagenicity	Not applicable.
h	Reproductive toxicity	Not applicable.

Toxicological data for ingredients listed in section 3:

DI(PROPYLENE GLYCOL) METHYL ETHER; CAS 34590-94-8

Acute toxicity.

LD50 (oral): >5000 mg/kg, rat
 LD50 (dermal): >13000 mg/kg
 LC50 (inhalation): No case of mortality has been observed in the indicated exposure time (7 hours), as per studies carried out on animals.

Skin corrosion / irritation

Not irritating to the skin.

Serious eye damages / eye irritation

Not irritating to the eyes (Draize test).

Respiratory or dermal sensitization.

Not classified as sensitizing (considering the available data, the classification criteria are not met).

Carcinogenicity.

No data is available on possible carcinogenic effects. The chemical structure does not cause any particular suspicion of such effects.

Germ cell mutagenicity.

The substance is not mutagenic on bacteria. The substance was not mutagenic on a mammal cell culture.

Toxicity for reproduction

Tests on animals have not shown any fetal damage.

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Not applicable.

POTASSIUM HYDROXIDE; CAS 1310-58-3

Acute toxicity.

LD50 (oral): 333 mg/kg, rat
 LD50 (dermal): no data available
 LC50 (inhalation): no data available

Skin corrosion / irritation

Strongly corrosive to skin and mucous

Serious eye damages / eye irritation

Strongly corrosive to eyes

Respiratory or dermal sensitization.

No adverse effect known

Germ cell mutagenicity.

No adverse effect known

Carcinogenicity.

No adverse effect known

Toxicity for reproduction

No adverse effect known

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Not applicable.

D-GLUCOPYRANOSE, OLIGOMER C8-C10 ALKYL GLUCOSIDE, CAS. 68515-73-1

Acute toxicity.

LD50 (oral): > 2000 mg/kg body weight - rat (OECD 423 Guideline).
LD50 (dermal): >2000 mg/kg body weight – rabbit (equivalent or similar to OECD 402 Guideline).
LC50 (inhalation): no data available.

Skin corrosion / irritation.

Not irritant – rabbit (OECD 404 Guideline).

Serious eye damages / eye irritation

Highly irritant – rabbit (OECD 405 Guideline).

Respiratory or dermal sensitization.

No sensitization – guinea pig, male (OECD 406 Guide line).

Germ cell mutagenicity

In vitro: linfoma (mouse) L5178Y cells (examination of mammalian cell genes, with and without metabolic activation): negative.
In vitro: S. salmonella enterica (Ames test, OECD 417 Guideline, with and without metabolic activation): negative.
In vitro: lung fibroblasts of Chinese hamster (chromosomal aberration test on mammals, OECD 473 Guideline with and without metabolic activation): negative.
In vivo: mouse (CD-1) male (micronucleus examination, OECD 474 Guide line): negative.

Carcinogenicity.

Not carcinogenous (analogy).

Toxicity for reproduction

Method: male/female rat (screening of a whole generation, oral: gastric probe 0, 100, 300, 1000 mg/kg of body weight, exposure: 2 weeks before mating and afterwards, until the day of sacrifice (53 study days, 4 days post partum). (daily), OECD 421 Guideline. Results: NOAEL (P): 1000 mg/kg of body weight/day (nominal) (male/female) – no treatment related effect.
Method: rat, oral: gastric probe, 0, 100, 300, 1000 mg/kg of body weight, exposure: 6-15 days of gestation (daily), OECD 414 Guideline. Results: NOAEL (maternal toxicity): 1000 mg/kg of body weight/day (nominal) – no treatment related effect.
NOAEL (toxicity in development): 1000 mg/kg of body weight/day (nominal) – no treatment related effect.

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Not applicable.

ALCOHOLS C6-12, ETHOXYLATES, PROPOXYLATES; CAS 68937-66-6

Acute toxicity.

LD50 (oral): >2000 mg/kg, rat
LD50 (dermal): no data available
LC50 (inhalation): no data available

Skin corrosion / irritation.

Slightly irritant – rabbit - Guide line OECD 404.
Based on the available data the classification criteria are not met.

Serious eye damages / eye irritation.

Irreversible effect on eyes – Guide line OECD 405
Causes serious damage to eyes.

Respiratory or dermal sensitization.

Not predictable, on the basis of the chemical structure and functional groups.

Germ cell mutagenicity.

Not predictable, on the basis of the chemical structure and functional groups.

Cancerogenicity.

No data available

Toxicity for reproduction

No data available.

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Not applicable.

ALCILIC ETHER OF CARBOXYLIC ACID; CAS N.A.**Acute toxicity.**

LD50 (oral): > 2000 mg/kg, rat
LD50 (dermal): no data available
LC50 (inhalation): no data available

Skin corrosion / irritation.

Irritant to skin.

Serious eye damages / eye irritation.

Risk of serious damages to eyes.

Respiratory or dermal sensitization.

No data available.

Germ cell mutagenicity.

No adverse effect known.

Cancerogenicity.

No adverse effect known.

Toxicity for reproduction

No adverse effect known.

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Non applicable

SODIUM 2-ETHYLHEXYL SULFATE; CAS 126-92-1**Acute toxicity.**

LD50 (oral): > 2000 mg/kg

Skin corrosion / irritation.

Irritant to skin. The product has not been tested. The indications are based on substances/products of a similar composition or structure.

Serious eye damages / eye irritation.

Risk of serious damages to eyes.

Respiratory or dermal sensitization.

No adverse effect known

Germ cell mutagenicity.

Negative (Directive 84/449/CEE, B.14).

Carcinogenicity.

No adverse effect known

Toxicity for reproduction

No data available

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Not applicable.

ALKYL SEC SULFONATE C14-17 - SODIUM SALT; CAS 97489-15-1

Acute toxicity.

LD50 (oral): 500 - 2000 mg/kg, rat
LD50 (dermal): >2000 mg/kg, rat

Skin corrosion / irritation.

Irritant to rabbit - Guide line OECD 404.

Serious eye damages / eye irritation.

Risk of serious damages to eyes. (Guide line OECD 405).

Respiratory or dermal sensitization.

Guinea pig, no adverse effect known (Guide line OECD 406).

Germ cell mutagenicity.

Based on the evaluation of several mutagenesis tests the product can be considered to be not mutagenic.

Carcinogenicity.

Based on long term tests there are no indications of cancerogenous effects.

Toxicity for reproduction

No adverse effect known.

Specific toxicity for target organs (STOT) – single exposure.

The substance or mixture is not classified as a target organ toxicant, single exposure.

Specific toxicity for target organs (STOT) – repeated exposure.

The substance or mixture is not classified as a target organ toxicant, repeated exposure.

Aspiration hazard.

Not applicable.

SECTION 12. Ecological information.

The following evaluation has been carried out on the basis of ecological data available for the individual ingredients and according to their amount using the calculation methods proposed by the European directives on the classification of dangerous preparations in their latest version.

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or sewers or contaminate soil or vegetation.

12.1. Toxicity.**Aquatic toxicity****DI(PROPYLENE GLYCOL) METHYL ETHER; CAS 34590-94-8**

LC50 (96h) – Fish:	>1000 mg/l – <i>Poecilia reticulata</i> (Guide line OECD 203; ISO 7346; 84/449/CEE, C.1 static)
EC50 (48h) – Invertebrates:	1919 mg/l – <i>Daphnia magna</i> (OPP 72-2, static).
EC50 (72h) – Algae:	>969 mg/l – <i>Pesudokirchneriella sub capitata</i> (Guide line OECD 201, static).
EC10 (18h) – Aquatic microorganisms:	4168 mg/l – activated mud

POTASSIUM HYDROXIDE; CAS 1310-58-3

LC50 (24h) – Fish:	80 mg/l <i>Gambusia affinis</i>
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D-GLUCOPYRANOSE, OLIGOMER C8-C10 ALKYL GLUCOSIDE, CAS. 68515-73-1

LC50 (96h) – Fish:	>100 mg/l – <i>Brachydanio rerio</i>
EC50 (48h) – Invertebrates:	10 - 100 mg/l – <i>Daphnia magna</i>
EC50 (72h) – Algae:	10 - 100 mg/l – <i>Scenedesmus subspicatus</i>
NOEC – Fish:	1,8 mg/l – <i>Brachydanio rerio</i>
NOEC – Invertebrates:	1 mg/l – <i>Daphnia magna</i>

ALCOHOLS C6-12, ETHOXYLATES, PROPOXYLATES; CAS 68937-66-6

LC50 (96h) – Fish:	1-10 mg/l – <i>Danio rerio</i> , Guide line OECD 203 static test
EC50 (48h) – Invertebrates:	1 - 10 mg/l – <i>Daphnia magna</i> , Guide line OECD TG 202 static test
EC50 (72h) – Algae:	1 - 10 mg/l – <i>Selenastrum capricornutum</i> , Directive 67/548/CEE, Attachment V, C.3 static test
NOEC (72h) – Algae:	1,7 mg/l – <i>Selenastrum capricornutum</i> , Directive 67/548/CEE, Attachment V, C.3 group observation static test.

ALCILIC ETHER OF CARBOXYLIC ACID; CAS N.A.

LC50 (96h) – Fish:	>100 mg/l
EC50 (48h) – Invertebrates:	67 mg/l – <i>Daphnia magna</i>
EC50 (72h) – Algae:	100 mg/l

SODIUM 2-ETHYLHEXYL SULFATE; CAS 126-92-1

LC50 (96h) – Fish:	1-10 mg/l <i>Carassius auratus</i>
EC50 (48h) – Invertebrates:	1 -10 mg/l – <i>Daphnia magna</i>

ALKYL SEC SULFONATE C14-17 - SODIUM SALT; CAS 97489-15-1

LC50 (96h) – Fish:	1 - 10 mg/l – <i>Barbo zebrato</i> (Guide line OECD 203).
EC50 (48h) – Invertebrates:	9,81 mg/l – <i>Daphnia magna</i> (Guide line OECD 202).
EC50 (72h) – Algae:	>61 mg/l – <i>Scenedesmus subspicatus</i> (Guide line OECD 201).

NOEC (16h) – Bacteria:	600 mg/l – Pseudomonas putida (Method DIN 38412 T.8).
NOEC (56 days) – Earth organisms:	470 mg/kg – Eisenia foetida (Guide line OECD 222).

12.2. Persistency and biodegradability.**DI(PROPYLENE GLYCOL) METHYL ETHER; CAS 34590-94-8**

Biodegradability: 96% reduction in the COD in 28 days – aerobic, domestic activated mud (Guide line OECD 301F; ISO9408; 92/69/CEE, C.4-D) – Easily biodegradable.

POTASSIUM HYDROXIDE; CAS 1310-58-3

Biodegradability: Not applicable.

Regulation (CE) n. 648/2004 and 907/2006

The surfactants contained in this preparation comply with the biodegradability criteria as laid down in Regulation (EC) No. 648/2004 and subsequent amendments on detergents. All data are held at the disposal of the competent authorities of the Member States and will be made, at their direct request or at the request of a detergent manufacturer to these authorities.

Respect the limits as set out by Italian legislative decree n. 152/06, for drainage:

pH = 5,5 – 9,5

COD = 160 mg/l (surface waters) and 500 mg/l (public drainage system)

Total phosphorus (as P) = 10 mg/l (surface waters) and 10 mg/l (public drainage system)

Total surfactants = 2 mg/l (surface waters) and 4 mg/l (public drainage system)

12.3. Bioaccumulative potential.

The ingredients in this product have a low bio-concentration factor.

DI(PROPYLENE GLYCOL) METHYL ETHER; CAS 34590-94-8

Bioaccumulation: log Kow = 0,004 (Guide line OECD 107) – bioaccumulation is not foreseen

POTASSIUM HYDROXIDE; CAS 1310-58-3

Bioaccumulation: not bioaccumulable.

D-GLUCOPYRANOSE, OLIGOMER C8-C10 ALKYL GLUCOSIDE, CAS. 68515-73-1

Bioaccumulation: log Kow < 1,77 (Guide line OECD 121) – bioaccumulation is not foreseen

ALCOHOLS C6-12, ETHOXYLATES, PROPOXYLATES; CAS 68937-66-6

Bioaccumulation: no data available.

SODIUM 2-ETHYLHEXYL SULFATE; CAS 126-92-1

Bioaccumulation: an accumulation in organisms should not be expected.

ALKYL SEC SULFONATE C14-17 - SODIUM SALT; CAS 97489-15-1

Bioaccumulation: given the low value of the partition coefficient octanol/water(LogPow) no bioaccumulation is expected.

12.4. Soil mobility.

Given the complete solubility in water of the product the mobility in soil is very high.

12.5. Results of PBT and vPvB assessment.

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

12.6. Other adverse effects.

Information not available.

SECTION 13. Disposal considerations.**13.1. Waste treatment methods**

Reuse if possible. Must not be disposed of with household waste. Do not empty into drains. Any residual product should be disposed of according to applicable regulations turning to authorized companies. Operate in accordance with the provisions of Directive 2008/98/EC.

This product cannot be established any number key for waste under the European Waste Catalogue (EWC) since the assignment is permitted only on the basis of the intended purpose and the use made by the consumer.

The waste key number must be arranged with an approved waste management which should be entrusted with the disposal, in compliance with national and local regulations.

13.2. Appropriate methods for packaging disposal.

The containers and packing materials contaminated with dangerous substances or preparations must be treated like the product and sent for recovery or disposal in compliance with local waste management regulations.

Dissolve any residual product in water and dispose of the contaminated liquid resulting in compliance with the regulations in force. After effective remediation packs may be disposed of as non-hazardous waste.

SECTION 14. Transport information.**14.1. UN number**

UN 1814

14.2. UN proper shipping name

POTASSIUM HYDROXIDE SOLUTION

14.3. Transport hazard class(es)

8

14.4. Packing group

II

14.5. Environmental hazards

NO

14.6. Special precautions for users

These goods must be transported by vehicles authorized to the carriage of dangerous goods according to the requirements in the current edition of the ADR And the applicable national regulations. The goods must be packed in their original, or in packagings made of materials resistant to their content and not likely to generate dangerous reactions. People loading and unloading dangerous goods must have received appropriate training about the risks deriving from these substances and the actions that must be taken in case of emergency situations.

IMDG	EmS:	F-A, S-B	
ADR	Stowage and segregation:	Category A	"Separate from" acids
	Transport code:	2	
	Tunnel restriction code:	(E)	
ADR-RID-ADN-IMDG	Limited quantity:	1L	
IATA	LTD QTY:	Pkg Inst Y840	0,5L
	Passenger and Cargo Aircraft	Pkg Inst 851	1L
	Cargo Aircraft Only	Pkg Inst 855	30L

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

N.A.

SECTION 15. Regulatory information.**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture.**

Seveso Category. None.

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006.

Product

Point 3

Substances in Candidate List (Art. 59 REACH).

None.

Substances subject to authorization (Annex XIV REACH).

None.

Healthcare controls.

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

German Water Hazard Class (VwVwS 2005).

WGK 1: Low hazard to waters

Ingredients in conformity to EC Regulation N.648/2004

Between 5% and 15% non-ionic surfactants
Below 5% anionic surfactants, amphoteric surfactants, phosphonates, polycarboxylates

15.2. Chemical safety assessment.

Substances in the mixture for which a chemical safety assessment is available:

POTASSIUM HYDROXIDE
D-GLUCOPYRANOSE, OLIGOMER C8-C10 ALKYL GLUCOSIDE
ALKYL SEC SULFONATE C14-17 - SODIUM SALT

SECTION 16. Other information.

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

Met. Corr. 1	Substance or mixture corrosive to metals, category 1
Acute Tox. 4	Acute toxicity, category 4
Skin Corr. 1A	Skin corrosion, category 1A
Eye Dam. 1	Serious eye damage, category 1
Eye Irrit. 2	Eye irritation, category 2
Skin Irrit. 2	Skin irritation, category 2
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H315	Causes skin irritation.

Text of risk (R) phrases mentioned in section 2-3 of the sheet:

R22 HARMFUL IF SWALLOWED.

R35	CAUSES SEVERE BURNS.
R36	IRRITATING TO EYES.
R38	IRRITATING TO SKIN.
R41	RISK OF SERIOUS DAMAGE TO EYES.

Key:

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- N.A.: Non available
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as Reach Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation

General bibliography.

1. Directive 1999/45/EC and following amendments
2. Directive 67/548/EEC and following amendments and adjustments
3. Regulation (EC) 1907/2006 (REACH) of the European Parliament
4. Regulation (EC) 1272/2008 (CLP) of the European Parliament
5. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
6. Regulation (EC) 453/2010 of the European Parliament
7. Regulation (EC) 286/2011 (II Atp. CLP) of the European Parliament
8. The Merck Index. - 10th Edition
9. Handling Chemical Safety
10. Niosh - Registry of Toxic Effects of Chemical Substances
11. INRS - Fiche Toxicologique (toxicological sheet)
12. Patty - Industrial Hygiene and Toxicology
13. N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
14. ECHA website

Note for users:

The information contained in the present sheet is based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

ANNEX. Exposure scenario for ingredients

Short title of Exposure Scenario: Professional use	
Sector of use (SU).	SU 22
Product category (PC).	PC35
Process category (PROC).	PROC2
Environment release category (ERC).	ERC8a
Contributing scenario controlling environmental exposure	
Product characteristics.	Covers concentrations up to 100%
Frequency and duration of use.	Continued exposure
Technical and specific conditions on-site to reduce or limit the drainage, emissions to the air and discharge to the earth.	A regular check of the pH is required in case of drainage into open waters. In general the drainage should take place in such a way as to minimize any modifications to the pH of the surface water. In general the majority of aquatic organisms are able to tolerate pH values between 6-9, as reported in the description of the OECD standard tests on aquatic organisms. The measures of risk management for the environment are aimed at avoiding drainage into public drainage systems or surface water, in the event in which such discharges would be able to cause significant changes to the pH.
Conditions and measures regarding the external treatment of waste for disposal.	The waste must be reused or discharged into industrial water drains and neutralized, if necessary.
Contributing scenario controlling worker exposure	
Product characteristics	Covers concentrations up to 100%
Quantity used	0,6 kg
Duration of exposure (per day)	>240 min
Technical conditions and measures at process level (source) to prevent release	Substitute manual procedures with automatic procedures where possible. Use closed systems or covered open systems. Use suction pumps. Transfer via closed circuit lines. Ensure that the transfer of materials is subject to containment measures or under suction ventilation. Adopt good standards of general ventilation. Natural ventilation comes from doors, windows. Controlled ventilation means air that is supplied from or extracted from an electrically powered ventilator. Avoid spray. Reduction of volumes of liquid in wells to prevent/collect any possible spills.
Organizational measures to prevent /limit releases, dispersion and exposure	Workers present in areas of risk or involved in working processes that are at risk must be training to: a) avoid working without protection of the respiratory tract, b) understand the corrosive properties and, particularly the effects of inhalation, c) follow the safety instructions given by the employer. The employer must make sure that the required PPE are available and are used according to their relative instructions. Substitute, where possible, manual processes with automatic processes and/or closed circuits. This would prevent the formation of fogs and aerosols that are irritants and potential sprays. Check the potential exposure using measures such as closed or autonomous systems, well equipped and maintained equipment and a plentiful general ventilation, discharge the systems and empty the pipelines before opening the installation. As far as possible, empty and rinse the equipment before carrying out any maintenance work. In case there is potential for exposure, ensure that the workers involved are informed on the nature of the exposure and on the fundamental methods to minimize the exposure. Ensure that the required personal protective equipment is available. Collect the spilled material and dispose of the waste according to the precautions foreseen by the law. Monitor the effectiveness of the control measures. Evaluate the necessity of monitoring health. Identify and implement collective measures. Ensure that the control measures are regularly checked and respected. On-site checks to make sure that the risk managements measures are used in the correct way and that the operative conditions are followed.
Conditions and measures related to personal protection, hygiene and health evaluation	In the event of the formation of powders or aerosols use PPE to protect the respiratory tract with the appropriate filter (P2). Wear suitable EN374 approved gloves. Wear safety glasses with side protection according to EN 166. Wear suitable protective clothing, aprons, shields and overalls. In the event of risk of spray: wear rubber boots.

Exposure estimation and reference to its source

Environment	The substance dissociates on contact with water, the only effect is an increase in pH, therefore after having passed through the water treatment plant the exposure is to be considered negligible and without any risk.
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Workers (ECETOC TRA model)

Contributing scenario	Specific conditions	Method of exposure	Level of exposure	PNEC	RCR
PROC2	Liquid	Inhalation	0,23 mg/m ³	1 mg/m ³	0,23

Guidance to DU to evaluate whether he works inside the boundaries set by the ES

If no measured data is available, the downstream user can use scaling instrument such as ECETOC TRA.
 Important note: showing a safe use, with respect to the estimated exposure with DNEL in the long term, the acute DNEL is also covered (according to guide R.14, it is possible to deduce the acute levels of exposure by multiplying the estimate long term exposure by a factor of 2).
 The exposure by inhalation is estimated with ECETOC TRA. For the scaling see: <http://ecetoc.org/tra>.
 Only correctly trained personnel should use scaling methods to see if the operative conditions and risk management are within the limits indicated in the exposure scenario.

Additional advice for good practice

It is assumed that adequate standards for hygiene in the workplace are adopted.