SAFETY DATA SHEET
CALCIUM CARBIDE

In accordance with Annex II of REACH - Regulation (EU) 2020/878

Version 1.6 / ENG Revision | Revision Date: 16.05.2025 | Date of first issue: 01.12.2010

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

1.1 Product identifier

Trade name : Calcium carbide

Registration number : **01-2119494719-18-0009**

CAS-No. : 75-20-7

Index-No. : 006-004-00-9

EC-No. : 200-848-3

This substance/ mixture contains nanoforms

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

Use of the Substance/Mixture : Inorganic intermediate, Preliminary / intermediate product for organic syntheses, Production of acetylene gas, Used in iron founderies, Desulphurization mixture, Metallurgical use, Laboratory chemicals

Recommended restrictions on use : Food additive, fruit ripening

1.3 Details of the supplier of the safety data sheet

Company : Carbitalia S.r.l.
Via Elettrochimica,1
23900 Lecco - Italy
+39 0342 420315

Telephone : +39 0342 420428

E-mail address of person responsible for the SDS : maurizio_bonacina@siad.eu

1.4 Emergency telephone number

Emergency telephone number : Carbitalia S.r.l. - Only available during office hours
+39 0342 420315 +39 0342 420428

Country	Organisation/Company	Address	Emergency number	Comment
Italy	Centro Antiveleni di Bergamo Azienda Ospedaliera Papa Giovanni XXII	Piazza OMS - Organizzazione Mondiale della Sanità, 1 24227	800 88 33 00	
Italy	Centro Antiveleni di Milano Ospedale Niguarda Ca' Granda	Piazza Ospedale Maggiore 3 20162	+39 02 6610 1029	
Italy	Centro Antiveleni di Roma CAV Policlinico "A. Gemelli", Dipartimento di Tossicologia Clinica Universita Cattolica del Sacro Cuore	Largo Agostino Gemelli, 8 00168	+39 06 305 4242	
Italy	Centro Antiveleni di Roma CAV Policlinico "Umberto I", Università di Roma	Viale del Policlinico, 155 00161	+39 06 4997 8000	

Italy	Centro Antiveleni di Firenze Az. Osp. "Careggi" U.O. Tossicologia Medica, S.O.D. di Tossicologia Clinicaicologia Clinica	Largo Brambilla, 3 50134	+39 055 794 7819	
Italy	Centro Antiveleni di Pavia CAV Centro Nazionale di Informazione Tossicologica, IRCCS Fondazione Maugeri	Via Salvatore Maugeri, 10 27100	+39 03 822 4444	
Italy	Centro Antiveleni di Roma CAV “Osp. Pediatrico Bambino Gesù” Dip. Emergenza e Accettazione DEA	Piazza Sant’Onofrio, 4 00165	+39 06 6859 3726	
Italy	Centro Antiveleni di Foggia Az. Osp. Univ. Foggia	V.le Luigi Pinto, 1 71122	+39 800 183 459	
Italy	Centro Antiveleni di Napoli Az. Osp. "A. Cardarelli"	Via A. Cardarelli, 9 80131	+39 081 54 53 333	
Italy	Centro Antiveleni di Verona Azienda Ospedaliera Integrata Verona	Piazzale Aristide Stefani, 1 37126	+39 800 011 858	

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Substances and mixtures, which in contact with water, emit flammable gases, Category 1	H260: In contact with water releases flammable gases which may ignite spontaneously.
Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Specific target organ toxicity - single exposure, Category 3	H335: May cause respiratory irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements :
H260 In contact with water releases flammable gases which may ignite spontaneously.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Precautionary statements :

Prevention:

P223 Do not allow contact with water.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P335 Brush off loose particles from skin.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P370 + P378 In case of fire: Use dry powder or dry sand to extinguish.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumula-tive and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regu-lation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Note alkalinity of product.
Contact with water liberates toxic, extremely flammable gas.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : calcium acetylide

Index-No. : 006-004-00-9

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	CLP classification M-Factor, SCL, ATE
calcium carbide	75-20-7 200-848-3	76-82	Water-react. 1, H260
calcium oxide	1305-78-8 215-138-9	14-18	Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 Water-react. 1, H260

This substance/ mixture contains nanoforms

Particle characteristics

Assessment : Assessment: This substance/ mixture contains nanoforms

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Seek medical advice in case of symptoms caused by eye or skin contact, inhalation or swallowing.
Remove contaminated or soaked clothing immediately and dispose of safely.

If inhaled : Move to fresh air.

In case of skin contact : Before washing use a dry brush to remove dust from skin.
Wash off with plenty of water and soap immediately.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
Remove contact lenses if this can be easily done.
Immediate further treatment in ophthalmic hospital/ ophthal-mologist.

If swallowed : Rinse out mouth.
Drink 1 or 2 glasses of water.
Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Nausea
Vomiting

Irritation of skin and mucous membranes

Risks : In contact with aqueous liquids, the product hydrolyses to flammable gases and strong alcaline hydroxide.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Do NOT induce vomiting.
In case of the intake of large amounts, pump out stomach ensuring to avoid reinhalation.
In case of skin irritation, use corticoid containing external preparations.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Dry sand
Dry powder

Unsuitable extinguishing media : Foam
Water

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products : carbon dioxide
calcium oxide

5.3 Advice for firefighters

Special protective equipment for firefighters : In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit.

Further information : In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Wear personal protective equipment; see section 8.
Keep out unprotected persons.
Avoid all contact with water and moisture.
Keep away from sources of ignition - No smoking.

6.2 Environmental precautions

Environmental precautions : Do not allow substance to enter soil, bodies of water or sewage canals.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Pick up mechanically and collect in a suitable container. Avoid formation of dust.

Keep containers open; do not seal hermetically.
Keep away from water and humidity.

6.4 Reference to other sections

For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Provide sufficient ventilation and exhaust at the workplace. Avoid dust formation. Avoid deposition of dust. Protect against humid air and water. Handle and open container with care.
Advice on protection against fire and explosion	:	Contact with water liberates extremely flammable gases. Protect against humid air and water. Keep away from combustion sources such as sparks, flames and unprotected light sources Use only explosion-proof equipment. No sparking tools should be used.
Hygiene measures	:	Do not breathe vapours/dust. Contact with skin, eyes and clothes must be strictly avoided Remove contaminated or saturated clothing immediately and dispose of safely. Before reuse remove dust in a dry manner, then wash. Keep working clothes separately. Do not eat, drink or smoke while working. Wash hands, and/or face before breaks and when workday is finished. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Store in a dry place. Protect from moisture. recommended: cover with dry inert gas.
Advice on common storage	:	Incompatible with acids and bases. Incompatible with oxidizing agents. Never allow product to get in contact with water during storage.
Packaging material	:	Suitable material: Mild steel, Aluminium Unsuitable material: Copper

7.3 Specific end use(s)

Specific use(s)	:	We are unaware of any specific end uses which go beyond the data reported in Section 1.

SECTION 8: Exposure controls/personal protection 8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
calcium oxide	1305-78-8	TWA (Respirable fraction)	1 mg/m3	2017/164/EU
	Further information: Indicative			
		STEL (Respirable fraction)	4 mg/m3	2017/164/EU
	Further information: Indicative			

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

Substance name	End Use	Exposure routes	Potential health effects	Value
calcium carbide	Workers	Inhalation	Long-term local effects	2 mg/m3
	Workers	Inhalation	Acute local effects	4 mg/m3
	Workers	Skin contact	Long-term systemic effects	
	Remarks:No hazard identified			
	Workers	Skin contact	Acute - local effects	
	Remarks:not derived			
calcium oxide	Workers	Inhalation	Long-term systemic effects	
	Exposure time: 8 h Remarks:No hazard identified			
	Workers	Inhalation	Long-term local effects	1 mg/m3
	Exposure time: 8 h			

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

Substance name	Environmental Compartment	Value
calcium carbide	Freshwater	0,00462 mg/l
	Fresh water sediment	
	Remarks:No exposure expected.	
	Marine water	0,000462 mg/l
	Marine sediment	
	Remarks:No exposure expected.	
	Sewage treatment plant	
	Remarks:No exposure expected.	
	Soil	
	Remarks:No exposure expected.	
calcium oxide	Freshwater	0,37 mg/l
	Fresh water sediment	
	Remarks:no data available	
	sewage treatment plant (STP)	2,27 mg/l
	Soil	817,4 mg/kg dry weight (d.w.)

	Marine water	0,24 mg/l
	Marine sediment	
	Remarks:no data available	

8.2 Exposure controls

Engineering measures

Control of environmental exposure: see exposure scenario

Personal protective equipment

Eye/face protection : Safety glasses

Hand protection

Material	:	Nitrile rubber, Recommendation: Camatril 730
Break through time	:	480 min
Glove thickness	:	0,4 mm
Directive	:	DIN EN 374
Manufacturer	:	Kächele-Cama Latex GmbH (KCL), Germany

Material	:	Chloroprene, Recommendation: Camapren 722
Break through time	:	480 min
Glove thickness	:	0,6 mm
Directive	:	DIN EN 374
Manufacturer	:	Kächele-Cama Latex GmbH (KCL), Germany

Remarks : When handling hot material, use heat resistant gloves.

Skin and body protection : Protective clothing
If intensive contact with the hazardous material cannot be avoided with certainty, order (depending on the hazard involved) additional protective measures for example chemical protective suit.
DuPont™ Tyvek® Classic Xpert (white)

Respiratory protection : Use suitable respiratory protection in the presence of dust.
Dust protection mask in accordance with EN 149 FFP2

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : powder or solid in various shapes

Colour : dark grey or dark brown

Odour : like garlic

Odour Threshold : no data available

Melting point/range : 2300 °C
pure substance

Boiling point/boiling range : Not applicable

Flammability	:	contact with water liberates highly flammable gases
Upper explosion limit / upper flammability limit	:	ca. 99,9 %(V) Acetylene
Lower explosion limit / Lower flammability limit	:	2,3 %(V) Acetylene
Flash point	:	Not applicable
Auto-ignition temperature	:	not determined
Decomposition temperature	:	not determined
pH	:	12,48 (20 °C) (1 % solution)
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Solubility(ies)		
Water solubility	:	decomposition by hydrolysis
Solubility in other solvents	:	not determined
Partition coefficient: n-octanol/water	:	not determined
Vapour pressure	:	not determined
Relative density	:	not determined
Density	:	2,22 g/cm3 (20 °C)
Bulk density	:	800 - 900 kg/m3
Relative vapour density	:	not determined
Particle characteristics		
Assessment	:	Assessment: This substance/ mixture contains nanoforms

9.2 Other information

no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

See section 10.3

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Under influence of humidity and water:
Formation of acetylene (danger of fire and explosion).

10.4 Conditions to avoid

Conditions to avoid : Exposure to moisture
Keep away from heat and sources of ignition.

10.5 Incompatible materials

Materials to avoid : humid air and water
Acids
Bases
methanol
hydrogen chloride (HCl)
Oxidizing agents
Copper
silver
Heavy metal salts

10.6 Hazardous decomposition products

Upon hydrolysis:
hydrogen
Acetylene
calcium hydroxide
Trace amounts of phosphine.

SECTION 11: Toxicological information

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

Acute toxicity

Components:

calcium carbide:

Acute oral toxicity : Remarks: Acute oral and dermatological toxicity examinations were not carried out due to the pH value.
Own test result.
IUCLID

Acute inhalation toxicity : Assessment: Based on available data, the classification criteria are not met.
Remarks: IUCLID

calcium oxide:

Acute oral toxicity : LD50 (rat): > 2000 mg/kg
Assessment: Based on available data, the classification criteria are not met.
Remarks: IUCLID

Acute inhalation toxicity	:	Remarks: no data available IUCLID
Acute dermal toxicity	:	LD50 (Rabbit): > 2500 mg/kg Assessment: Based on available data, the classification criteria are not met. Remarks: IUCLID

Skin corrosion/irritation

Product:

Assessment	:	Causes skin irritation.

Components:

calcium carbide:

Assessment	:	Irritating to skin.
Remarks	:	IUCLID

calcium oxide:

Assessment	:	Irritating to skin.
Remarks	:	IUCLID

Serious eye damage/eye irritation

Product:

Assessment	:	Causes serious eye damage.

Components:

calcium carbide:

Assessment	:	Risk of serious damage to eyes.
Method	:	OECD Guide-line 405
Remarks	:	IUCLID

calcium oxide:

Assessment	:	Risk of serious damage to eyes.
Remarks	:	IUCLID

Respiratory or skin sensitisation

Components:

calcium carbide:

Assessment	:	Based on available data, the classification criteria are not met.
Remarks	:	IUCLID

calcium oxide:

Assessment	:	Based on available data, the classification criteria are not met.
Remarks	:	IUCLID

Germ cell mutagenicity

Components:

calcium carbide:

Germ cell mutagenicity- Assessment	:	Based on available data, the classification criteria are not met. Remarks: IUCLID

calcium oxide:

Germ cell mutagenicity- Assessment	:	Not mutagenic in Ames Test Remarks: IUCLID

Carcinogenicity

Components:

calcium carbide:

Carcinogenicity - Assessment	:	Based on available data, the classification criteria are not met. Remarks: IUCLID

calcium oxide:

Carcinogenicity - Assessment	:	Based on available data, the classification criteria are not met. Remarks: IUCLID

Reproductive toxicity

Components:

calcium carbide:

Reproductive toxicity - Assessment	:	Based on available data, the classification criteria are not met. Remarks: IUCLID

calcium oxide:

Reproductive toxicity - Assessment	:	Based on available data, the classification criteria are not met. Remarks: IUCLID

STOT - single exposure

Product:

Assessment	:	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

calcium carbide:

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
Remarks : IUCLID

calcium oxide:

Assessment : The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
Remarks : IUCLID

STOT - repeated exposure

Components:

calcium carbide:

Assessment : Based on available data, the classification criteria are not met.
Remarks : IUCLID

calcium oxide:

Assessment : Based on available data, the classification criteria are not met.
Remarks : IUCLID

Aspiration toxicity

Components:

calcium carbide:

Based on available data, the classification criteria are not met.
Remarks : IUCLID

calcium oxide:

Based on available data, the classification criteria are not met.
Remarks : IUCLID

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : No additional toxicological data are available.

Components:

calcium carbide:

Remarks : Under physiological conditions, complete hydrolysis. The following toxicological data refer to calcium hydroxide.
It is not possible to carry out toxicological examinations be-cause of the high level of reactivity.

SECTION 12: Ecological information

12.1 Toxicity

Components:

calcium carbide:

Toxicity to fish : LC50 (Oncorhynchus mykiss): > 50 mg/l
Exposure time: 96 h
Method: OECD 203
Remarks: Own test result.

NOEC (Oncorhynchus mykiss): 50 mg/l
Exposure time: 96 h
Method: OECD 203
Remarks: Own test result.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 4,62 mg/l
Exposure time: 48 h
Method: OECD 202 part 1
Remarks: Own test result.

NOEC (Daphnia magna (Water flea)): 2,22 mg/l
Exposure time: 48 h
Method: OECD 202 part 1
Remarks: Own test result.

Toxicity to algae/aquatic plants : ErC50 (Scenedesmus spec.): 46,5 mg/l
Exposure time: 72 h
Method: OECD 201
Remarks: Own test result.

NOEC (Scenedesmus spec.): 5,6 mg/l
Exposure time: 72 h
Method: OECD 201
Remarks: Own test result.

calcium oxide:

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): 1070 mg/l Exposure time: 96 h Test Type: LC50 Remarks: IUCLID

12.2 Persistence and degradability

Components:

calcium carbide:

Biodegradability	:	Result: readily biodegradable Remarks: IUCLID

calcium oxide:

Biodegradability	:	Remarks: Readily biodegradable. Literature, IUCLID

12.3 Bioaccumulative potential

no data available

12.4 Mobility in soil

no data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Environmental fate and pathways	:	Under ambient conditions quick hydrolysis, Reduction or decomposition occurs.
Additional ecological information	:	The product may be harmful to aquatic organisms by pH-shift. No further ecotoxicological data are available.

Components:

calcium carbide:

Environmental fate and pathways : Under ambient conditions quick hydrolysis, Reduction or de-composition occurs.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Must be brought to an adequate waste treatment facility, in conformity with applicable waste disposal regulations. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging : Packaging, that can not be reused after cleaning must be disposed or recycled in accordance with all federal, national and local regulations. Return reusable containers to supplier.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : UN 1402

RID : UN 1402

IMDG : UN 1402

IATA (Cargo) : UN 1402

IATA (Passenger) : UN 1402
Not permitted for transport

14.2 UN proper shipping name

ADR : CALCIUM CARBIDE

RID : CALCIUM CARBIDE

IMDG : CALCIUM CARBIDE

IATA (Cargo) : Calcium carbide

IATA (Passenger) : Calcium carbide
Not permitted for transport

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADR	4.3	
RID	4.3	

IMDG	:	4.3
IATA (Cargo)	:	4.3
IATA (Passenger)	:	Not permitted for transport

14.4 Packing group

Remarks	:	Keep dry: vigorous reaction with water

ADR

Packing group	:	I
Classification Code	:	W2
Hazard Identification Number	:	X423
Labels	:	4.3
Tunnel restriction code	:	(B/E)

RID

Packing group	:	I
Classification Code	:	W2
Hazard Identification Number	:	X423
Labels	:	4.3

IMDG

Packing group	:	I
Labels	:	4.3
EmS Code	:	F-G, S-N
Remarks	:	Keep separate from acids. Keep dry: vigorous reaction with water

IATA (Cargo)

Packing instruction (cargo aircraft)	:	487
Packing group	:	I
Labels	:	Dangerous When Wet
Remarks	:	ERG-Code 4W Keep dry: vigorous reaction with water

IATA (Passenger)	:	Not permitted for transport
Remarks	:	ERG-Code 4W

14.5 Environmental hazards

ADR

Environmentally hazardous	:	no

RID

Environmentally hazardous	:	no

IMDG

Marine pollutant	:	no

14.6 Special precautions for user

Remarks	:	Keep dry: vigorous reaction with water

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and var-iations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mix-ture

Contains no substance(s) listed on the REACH Candidate List.
Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants).
Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals).

15.2 Chemical safety assessment

A substance safety assessment was carried out for this product.

SECTION 16: Other information

Full text of other abbreviations

2017/164/EU	:	Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values
2017/164/EU / STEL	:	Short term exposure limit
2017/164/EU / TWA	:	Limit Value - eight hours

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Test-ing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regula-tion (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergen-cy Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration as-sociated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good La-boratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships car-rying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - Interna-tional Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL
- Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test popula-tion; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - Interna-tional Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Ef-fect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention;

- PBT - Persistent, Bioaccumulative and Toxic sub-stance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quanti-tative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Re-striction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA
- Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

REG_EU / EN

Annex: Exposure Scenarios

Table of Contents

Number	Title
ES 1	Worker (industrial) - Formulation and Re-Packing
ES 2	Worker (industrial) - Use as an Intermediate
ES 3	Worker (industrial) - Metallurgy
ES 4	Worker (occupational) - Carbide lamp
ES 5	Worker (occupational) - Carbide welding
ES 6	Worker (occupational) - Moisture analyser

ES 1: Worker (industrial) - Formulation and Re-

Packing 1.1. Title section

Structured Short Title	:	Worker (industrial) - Formulation and Re-Packing

Environment		
CS 1	**Worker (industrial) - Formulation and Re-Packing**	ERC2
Worker		
CS 2	**Worker (industrial) - Formulation and Re-Packing**	PROC5
CS 3	**Worker (industrial) - Formulation and Re-Packing**	PROC8b

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation of preparations (ERC2)

Amount used (or contained in articles), frequency and duration of use/exposure		
Annual amount per site	:	120000000 kg 100 %
Daily amount per site	:	400000 kg
Technical and organisational conditions and measures		
Air filtration – particle removal Air - minimum efficiency of 99,9 % Water - minimum efficiency of 100 %		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal STP
STP sludge treatment	:	sludge to soil
STP effluent	:	2000 m^3/d
efficiency of sewage treatment plant	:	100 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	See Section 13 of the Safety Data Sheet.
Other conditions affecting environmental exposure		

Receiving surface water flow	: 18000 m³/d
Indoor or outdoor use	: Indoor use

1.2.2. Control of worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) (PROC5)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: High
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: duration of activity < 8 h
Technical and organisational conditions and measures	
Local exhaust ventilation Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 90 %	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Room size	: 3000 m3
Temperature	: Covers use at temperatures below melting point.
Ventilation rate per hour	: 10
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Occupational Health and Safety Management System: Advanced	

1.2.3. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Product (article) characteristics

Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: High
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: duration of activity < 15 min
Technical and organisational conditions and measures	
Local exhaust ventilation Inhalation - minimum efficiency of 95 %	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable respiratory protection. Inhalation - minimum efficiency of 90 %	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 90 %	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 3
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Occupational Health and Safety Management System: Advanced	

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation of preparations (ERC2)

Protection Target	Exposure estimate	RCR
Freshwater	< 0,0000001 mg/L (EUSES)	< 0,01
Marine water	< 0,0000001 mg/L (EUSES)	< 0,01
Freshwater sediment	(Other consideration (non-standard tool))	
Marine sediment	(Other consideration (non-standard tool))	
Sewage treatment plant	(Other consideration (non-	

	standard tool))	
Agricultural soil	(Other consideration (non-standard tool))	
Man via environment - Oral	(Other consideration (non-standard tool))	

1.3.2. Worker exposure: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,25 mg/m³ (ART v1.0)	0,125
inhalative	local	short-term	0,53 mg/m³ (ART v1.0)	0,132
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

1.3.3. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,012 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,5 mg/m³ (ECETOC TRA worker v3)	0,125
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

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

In addition to the displayed PROC all PROC could be regarded as safe uses that could be deduced from “PROC Inclusion Hierarchy” (CEFIC, 2011-07-13)
If necessary, an increase in the use tonnage can be achieved by adapting the use conditions to local circumstances (scaling).

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemi-cal safety assessment is required.
Further details on scaling and control technologies are provided in SPERC factsheet.

ES 2: Worker (industrial) - Use as an Intermediate

2.1. Title section

Structured Short Title	:	Worker (industrial) - Use as an Intermediate

Environment		
CS 1	**Worker (industrial) - Use as an Intermediate**	ERC6a
Worker		
CS 2	**Worker (industrial) - Use as an Intermediate**	PROC2
CS 3	**Worker (industrial) - Use as an Intermediate**	PROC8b

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)

Amount used (or contained in articles), frequency and duration of use/exposure		
Annual amount per site	:	100000000 kg 100 %
Daily amount per site	:	333300 kg
Technical and organisational conditions and measures		
Air filtration – particle removal Air - minimum efficiency of 99,9 % Water - minimum efficiency of 100 %		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal STP
STP sludge treatment	:	sludge to soil
STP effluent	:	2000 m^3/d
efficiency of sewage treatment plant	:	100 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	See Section 13 of the Safety Data Sheet.

Other conditions affecting environmental exposure	
Receiving surface water flow	: 18000 m³/d

2.2.2. Control of worker exposure: Use in closed, continuous process with occasional con-trolled exposure (PROC2)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: High
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: duration of activity < 8 h
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 10
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Occupational Health and Safety Management System: Advanced	

2.2.3. Control of worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: High
Amount used (or contained in articles), frequency and duration of use/exposure	

Duration	: duration of activity < 15 min
Technical and organisational conditions and measures	
Local exhaust ventilation Inhalation - minimum efficiency of 95 %	
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
Wear a respirator conforming to EN140. Inhalation - minimum efficiency of 90 %	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 3
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Occupational Health and Safety Management System: Advanced	

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Industrial use resulting in manufacture of another substance (use of intermediates) (ERC6a)

Protection Target	Exposure estimate	RCR
Freshwater	< 0,0000001 mg/L (EUSES)	< 0,01
Marine water	< 0,0000001 mg/L (EUSES)	< 0,01
Freshwater sediment	(Other consideration (non-standard tool))	
Marine sediment	(Other consideration (non-standard tool))	
Sewage treatment plant	(Other consideration (non-standard tool))	
Agricultural soil	(Other consideration (non-standard tool))	
Man via environment - Oral	(Other consideration (non-	

	standard tool))	

2.3.2. Worker exposure: Use in closed, continuous process with occasional controlled expo-sure (PROC2)

Exposure route	Health effect	Exposure indica-tor	Exposure esti-mate	RCR
inhalative	local	long-term	0,3 mg/m³ (ECETOC TRA worker v3)	0,15
inhalative	local	short-term	1,2 mg/m³ (ECETOC TRA worker v3)	0,3
dermal	local	long-term	(Qualitative ap-proach)	
dermal	local	short-term	(Qualitative ap-proach)	

2.3.3. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indica-tor	Exposure esti-mate	RCR
inhalative	local	long-term	0,012 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,5 mg/m³ (ECETOC TRA worker v3)	0,125
dermal	local	long-term	(Qualitative ap-proach)	
dermal	local	short-term	(Qualitative ap-proach)	

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

In addition to the displayed PROC all PROC could be regarded as safe uses that could be deduced from “PROC Inclusion Hierarchy” (CEFIC, 2011-07-13)
If necessary, an increase in the use tonnage can be achieved by adapting the use conditions to local circumstances (scaling).

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemi-cal safety assessment is required.

ES 3: Worker (industrial) - Metallurgy

3.1. Title section

Structured Short Title	: Worker (industrial) - Metallurgy

Environment		
CS 1	**Worker (industrial) - Metallurgy**	ERC6b
Worker		
CS 2	**Worker (industrial) - Metallurgy**	PROC2
CS 3	**Worker (industrial) - Metallurgy**	PROC22

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Industrial use of reactive processing aids (ERC6b)

Amount used (or contained in articles), frequency and duration of use/exposure	
Annual amount per site	: 2000000 kg 100 %
Daily amount per site	: 66670 kg
Technical and organisational conditions and measures	
Air filtration – particle removal Air - minimum efficiency of 99,9 % Water - minimum efficiency of 100 %	
Conditions and measures related to sewage treatment plant	
STP type	: Municipal STP
STP sludge treatment	: sludge to soil
STP effluent	: 2000 m^3/d
efficiency of sewage treatment plant	: 100 %
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: See Section 13 of the Safety Data Sheet.
Other conditions affecting environmental exposure	

Receiving surface water flow	:	18000 m³/d

3.2.2. Control of worker exposure: Use in closed, continuous process with occasional con-trolled exposure (PROC2)

Product (article) characteristics		
Covers concentrations up to 100 %		
Physical form of product	:	solid Dustiness: High
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	duration of activity < 8 h
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %		
For further specification, refer to section 8 of the SDS.		
Other conditions affecting workers exposure		
Indoor or outdoor use	:	Indoor use.
Temperature	:	Covers use at temperatures below melting point.
Ventilation rate per hour	:	10
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply		
Occupational Health and Safety Management System: Advanced		

3.2.3. Control of worker exposure: Potentially closed processing operations with minerals/ metals at elevated temperature; Industrial setting (PROC22)

Product (article) characteristics		
Covers concentrations up to 5 %		
Physical form of product	:	solid
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	duration of activity < 8 h
Conditions and measures related to personal protection, hygiene and health evaluation		

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
For further specification, refer to section 8 of the SDS.

Other conditions affecting workers exposure

Indoor or outdoor use	:	Indoor use.
Temperature	:	Covers use at temperatures below melting point.
Ventilation rate per hour	:	10

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply

Occupational Health and Safety Management System: Advanced

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Industrial use of reactive processing aids (ERC6b)

Protection Target	Exposure estimate	RCR
Freshwater	< 0,0000001 mg/L (EUSES)	< 0,01
Marine water	< 0,0000001 mg/L (EUSES)	< 0,01
Freshwater sediment	(Other consideration (non-standard tool))	
Marine sediment	(Other consideration (non-standard tool))	
Sewage treatment plant	(Other consideration (non-standard tool))	
Agricultural soil	(Other consideration (non-standard tool))	
Man via environment - Oral	(Other consideration (non-standard tool))	

3.3.2. Worker exposure: Use in closed, continuous process with occasional controlled expo-sure (PROC2)

Exposure route	Health effect	Exposure indica-tor	Exposure esti-mate	RCR
inhalative	local	long-term	0,3 mg/m³ (ECETOC TRA worker v3)	0,15

inhalative	local	short-term	1,2 mg/m³ (ECETOC TRA worker v3)	0,3
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

3.3.3. Worker exposure: Potentially closed processing operations with minerals/ metals at ele-vated temperature; Industrial setting (PROC22)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,6 mg/m³ (ECETOC TRA worker v3)	0,3
inhalative	local	short-term	2,4 mg/m³ (ECETOC TRA worker v3)	0,6
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

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

In addition to the displayed PROC all PROC could be regarded as safe uses that could be deduced from “PROC Inclusion Hierarchy” (CEFIC, 2011-07-13)
If necessary, an increase in the use tonnage can be achieved by adapting the use conditions to local circumstances (scaling).

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemi-cal safety assessment is required.

ES 4: Worker (occupational) - Carbide lamp

4.1. Title section

Structured Short Title	:	Worker (occupational) - Carbide lamp

Environment		
CS 1	**Worker (occupational) - Carbide lamp**	ERC8e
Worker		
CS 2	**Worker (occupational) - Carbide lamp**	PROC15

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Wide dispersive outdoor use of reactive substances in open systems (ERC8e)

Amount used (or contained in articles), frequency and duration of use/exposure		
Daily amount per site	:	0,15 kg 10 %
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal STP
STP sludge treatment	:	sludge to soil
STP effluent	:	2000 m³/d
efficiency of sewage treatment plant	:	96,51 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	See Section 13 of the Safety Data Sheet.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18000 m³/d

4.2.2. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics

Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: Low
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: duration of activity < 15 min
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 90 %	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 3
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Basic Occupational Health and Safety Management System	

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Wide dispersive outdoor use of reactive substances in open systems (ERC8e)

Protection Target	Exposure estimate	RCR
Freshwater	0,0000052 mg/L (EUSES)	< 0,01
Marine water	< 0,0000005 mg/L (EUSES)	< 0,01
Freshwater sediment	(Other consideration (non-standard tool))	
Marine sediment	(Other consideration (non-standard tool))	
Sewage treatment plant	(Other consideration (non-standard tool))	
Agricultural soil	(Other consideration (non-standard tool))	
Man via environment - Oral	(Other consideration (non-	

	standard tool))	

4.3.2. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,01 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,4 mg/m³ (ECETOC TRA worker v3)	0,1
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

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

In addition to the displayed PROC all PROC could be regarded as safe uses that could be deduced from “PROC Inclusion Hierarchy” (CEFIC, 2011-07-13)
If necessary, an increase in the use tonnage can be achieved by adapting the use conditions to local circumstances (scaling).

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemi-cal safety assessment is required.

ES 5: Worker (occupational) - Carbide welding

5.1. Title section

Structured Short Title	:	Worker (occupational) - Carbide welding

Environment		
CS 1	**Worker (occupational) - Carbide welding**	ERC8e
Worker		
CS 2	**Worker (occupational) - Carbide welding**	PROC3

5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Wide dispersive outdoor use of reactive substances in open systems (ERC8e)

Amount used (or contained in articles), frequency and duration of use/exposure		
Daily amount per site	:	0,5 kg 10 %
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal STP
STP sludge treatment	:	sludge to soil
STP effluent	:	2000 m³/d
efficiency of sewage treatment plant	:	96,51 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	See Section 13 of the Safety Data Sheet.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18000 m³/d

5.2.2. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: Low
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: duration of activity < 15 min
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 90 %	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 3
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Basic Occupational Health and Safety Management System	

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Wide dispersive outdoor use of reactive substances in open systems (ERC8e)

Protection Target	Exposure estimate	RCR
Freshwater	0,0000175 mg/L (EUSES)	< 0,01
Marine water	0,0000017 mg/L (EUSES)	< 0,01
Freshwater sediment	(Other consideration (non-standard tool))	
Marine sediment	(Other consideration (non-standard tool))	
Sewage treatment plant	(Other consideration (non-standard tool))	
Agricultural soil	(Other consideration (non-	

	standard tool))	
Man via environment - Oral	(Other consideration (non-standard tool))	

5.3.2. Worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,01 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,4 mg/m³ (ECETOC TRA worker v3)	0,1
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

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

In addition to the displayed PROC all PROC could be regarded as safe uses that could be deduced from “PROC Inclusion Hierarchy” (CEFIC, 2011-07-13)
If necessary, an increase in the use tonnage can be achieved by adapting the use conditions to local circumstances (scaling).

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemi-cal safety assessment is required.

ES 6: Worker (occupational) - Moisture

analyser 6.1. Title section

Structured Short Title	: Worker (occupational) - Moisture analyser

Environment		
CS 1	**Worker (occupational) - Moisture analyser**	ERC9b
Worker		
CS 2	**Worker (occupational) - Moisture analyser**	PROC15

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Wide dispersive outdoor use of substances in closed systems (ERC9b)

Amount used (or contained in articles), frequency and duration of use/exposure	
Daily amount per site	: 0,005 kg 10 %
Conditions and measures related to sewage treatment plant	
STP type	: Municipal STP
STP sludge treatment	: sludge to soil
STP effluent	: 2000 m³/d
efficiency of sewage treatment plant	: 96,51 %
Conditions and measures related to treatment of waste (including article waste)	
Waste treatment	: See Section 13 of the Safety Data Sheet.
Other conditions affecting environmental exposure	
Receiving surface water flow	: 18000 m³/d

6.2.2. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics

Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: Low
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: duration of activity < 15 min
Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 90 %	
For further specification, refer to section 8 of the SDS.	
Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 3
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	
Basic Occupational Health and Safety Management System	

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Wide dispersive outdoor use of substances in closed systems (ERC9b)

Protection Target	Exposure estimate	RCR
Freshwater	0,0000004 mg/L (EUSES)	< 0,01
Marine water	< 0,0000001 mg/L (EUSES)	< 0,01
Freshwater sediment	(Other consideration (non-standard tool))	
Marine sediment	(Other consideration (non-standard tool))	
Sewage treatment plant	(Other consideration (non-standard tool))	
Agricultural soil	(Other consideration (non-standard tool))	
Man via environment - Oral	(Other consideration (non-	

	standard tool))	

6.3.2. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,01 mg/m³ (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,4 mg/m³ (ECETOC TRA worker v3)	0,1
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

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

In addition to the displayed PROC all PROC could be regarded as safe uses that could be deduced from “PROC Inclusion Hierarchy” (CEFIC, 2011-07-13)
If necessary, an increase in the use tonnage can be achieved by adapting the use conditions to local circumstances (scaling).

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemi-cal safety assessment is required.