

# SAFETY DATA SHEET

## CALCIUM CARBIDE

According to Regulation (EC) 1907/2006 (Reach)

Version 1. 4 / ENG Revision

Revision Date: 02.01.2023

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 Sub-stance/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 0341 420315  
Telephone : +39 0341 420438  
E-mail address of person responsible for the SDS : [maurizio\\_bonacina@siad.eu](mailto:maurizio_bonacina@siad.eu)

#### 1.4 Emergency telephone number

Emergency telephone number : Carbitalia S.r.l. - Only available during office hours  
+39 0341 420315 +39 0341 420438

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### 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 ex-	H335: May cause respiratory irritation.

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posure, Category 3

### 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, bioaccumulative 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 regulation (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.

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### 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)	M-Factor, SCL, ATE
calcium carbide	75-20-7 200-848-3	76-82	
calcium oxide	1305-78-8 215-138-9	14-18	

■ 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/ ophthalmologist.

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

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Irritation of skin and mucous membranes

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

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## 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.

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## 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.

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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.

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## 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.

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### 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/m <sup>3</sup>	2017/164/EU
Further information: Indicative				
		STEL (Respirable fraction)	4 mg/m <sup>3</sup>	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/m <sup>3</sup>
	Workers	Inhalation	Acute local effects	4 mg/m <sup>3</sup>
	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/m <sup>3</sup>
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.	
calcium oxide	Sewage treatment plant	
	Remarks: No exposure expected.	
	Soil	
	Remarks: No exposure expected.	
	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.)

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	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

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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/cm <sup>3</sup> (20 °C)
Bulk density	:	800 - 900 kg/m <sup>3</sup>
Relative vapour density	:	not determined
Particle characteristics		
Assessment	:	Assessment: This substance/ mixture contains nanoforms

### 9.2 Other information

no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

See section 10.3



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### 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.

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## 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

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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:

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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.

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### 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.

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### 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.

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## 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:

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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.

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### Components:

#### calcium carbide:

Environmental fate and pathways : Under ambient conditions quick hydrolysis, Reduction or decomposition occurs.

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## 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.

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## 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 |                  |

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**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<sub>2</sub>, 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



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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 variations in regional or country regulations.

### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

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## SECTION 15: Regulatory information

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

### 15.2 Chemical safety assessment

A substance safety assessment was carried out for this product.

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## 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 Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (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 - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect 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 substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Re-

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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.

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### Annex: Exposure Scenarios

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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

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

#### Packing 1.1. Title section

<b>Structured Short Title</b>	: Worker (industrial) - Formulation and Re-Packing
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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 <sup>3</sup> /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	

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Receiving surface water flow	: 18000 m <sup>3</sup> /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)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : solid Dustiness: High
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : duration of activity < 8 h
<b>Technical and organisational conditions and measures</b>
Local exhaust ventilation Dermal - minimum efficiency of 90 % Inhalation - minimum efficiency of 90 %
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
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.
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use.
Room size : 3000 m <sup>3</sup>
Temperature : Covers use at temperatures below melting point.
Ventilation rate per hour : 10
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
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)

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

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	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/m <sup>3</sup> (ART v1.0)	0,125
inhalative	local	short-term	0,53 mg/m <sup>3</sup> (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/m <sup>3</sup> (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,5 mg/m <sup>3</sup> (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).

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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 chemical safety assessment is required. Further details on scaling and control technologies are provided in SPERC factsheet.



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

#### 2.1. Title section

<b>Structured Short Title</b>	: Worker (industrial) - Use as an Intermediate
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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 <sup>3</sup> /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.

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Other conditions affecting environmental exposure	
Receiving surface water flow	: 18000 m <sup>3</sup> /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	

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Duration	: duration of activity < 15 min
<b>Technical and organisational conditions and measures</b>	
Local exhaust ventilation Inhalation - minimum efficiency of 95 %	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
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.	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at ambient temperatures.
Ventilation rate per hour	: 3
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
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-	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,15
inhalative	local	short-term	1,2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,3
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

### 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 indicator	Exposure estimate	RCR
inhalative	local	long-term	0,012 mg/m <sup>3</sup> (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,5 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,125
dermal	local	long-term	(Qualitative approach)	
dermal	local	short-term	(Qualitative approach)	

## 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 chemical safety assessment is required.

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### ES 3: Worker (industrial) - Metallurgy

#### 3.1. Title section

<b>Structured Short Title</b>	: Worker (industrial) - Metallurgy
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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 <sup>3</sup> /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	

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Receiving surface water flow	: 18000 m <sup>3</sup> /d
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### 3.2.2. Control of worker exposure: Use in closed, continuous process with occasional con-trolled exposure (PROC2)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: solid Dustiness: High
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: duration of activity < 8 h
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
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.	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at temperatures below melting point.
Ventilation rate per hour	: 10
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
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)

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

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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.	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use.
Temperature	: Covers use at temperatures below melting point.
Ventilation rate per hour	: 10
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
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 indicator	Exposure estimate	RCR
inhalative	local	long-term	0,3 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,15

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inhalative	local	short-term	1,2 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,3
dermal	local	long-term	(Qualitative ap- proach)	
dermal	local	short-term	(Qualitative ap- proach)	

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
inhalative	local	long-term	0,6 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,3
inhalative	local	short-term	2,4 mg/m <sup>3</sup> (ECETOC TRA worker v3)	0,6
dermal	local	long-term	(Qualitative ap- proach)	
dermal	local	short-term	(Qualitative ap- proach)	

### 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 chemical safety assessment is required.



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### ES 4: Worker (occupational) - Carbide lamp

#### 4.1. Title section

<b>Structured Short Title</b>	: Worker (occupational) - Carbide lamp
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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 m <sup>3</sup> /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 m <sup>3</sup> /d

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

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

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	standard tool))	
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### 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/m <sup>3</sup> (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,4 mg/m <sup>3</sup> (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 chemical safety assessment is required.

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### ES 5: Worker (occupational) - Carbide welding

#### 5.1. Title section

<b>Structured Short Title</b>	: Worker (occupational) - Carbide welding
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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 m <sup>3</sup> /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 m <sup>3</sup> /d

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

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## CALCIUM CARBIDE

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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-	

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	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/m <sup>3</sup> (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,4 mg/m <sup>3</sup> (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 chemical safety assessment is required.

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### ES 6: Worker (occupational) - Moisture

#### analyser 6.1. Title section

<b>Structured Short Title</b>	: Worker (occupational) - Moisture analyser
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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 m <sup>3</sup> /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 m <sup>3</sup> /d

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

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



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	standard tool))	
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### 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/m <sup>3</sup> (ECETOC TRA worker v3)	< 0,01
inhalative	local	short-term	0,4 mg/m <sup>3</sup> (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 chemical safety assessment is required.