

## SAFETY DATA SHEET (SDS)

**PRODUCT NAME : GRC Cartridge C150Y/W/JV/R/C6 C250Y/JV**

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/ UNDERTAKING

#### 1.1 Product identifier

Product name: Gas Reactor Column (GRC) Cartridge  
Types C150Y, C150W, C150JV, C150R, C150C6, C250Y and C250JV  
Other means of identification: None  
Item numbers: Does not have an Edwards part number; referred to by the product name

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

Only to be used for gas abatement from etch and CVD semiconductor processing.

#### 1.3 Details of the supplier of the safety data sheet

##### UK contact details

Edwards, Innovation Drive, Burgess Hill, West Sussex,  
RH15 9TW, United Kingdom

##### General enquiries

Tel: +44 (0)8459 212223  
Email: info@edwardsvacuum.com

##### US contact details

Edwards, 6416 Inducon Drive West, Sanborn,  
New York, 14132, USA

##### General enquiries

Toll Free: 1-800-848-9800

#### 1.4 Emergency telephone number

Emergency phone +44 (0)1293 565690

### SECTION 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

GHS classification: Mixture.  
Classification according to Regulation (EC) No. 1272/2008: Skin irritation (Category 2).  
Serious eye damage (Category 1).  
Specific target organ toxicity - single exposure (Category 3).  
Classification according to Directive 1999/45/EC: Irritating to respiratory system and skin. Risk of serious damage to eyes.

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### 2.2 Label elements

Label elements according to Regulation (EC) No 1272/2008 (CLP)

Hazard pictograms:



Signal words:

Danger

Hazard statements:

H315 - Causes skin irritation.

H318 - Causes serious eye damage.

H335 - May cause respiratory irritation.

Precautionary statements:

P261 - Avoid breathing dust.

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

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

Remove contact lenses if present and easy to do. Continue rinsing.

P501 - Dispose of contents/container to an approved waste disposal plant.

Label elements according to European Directive 1999/45/EC as amended

Hazard symbols:



R-phrases(s)

R37/38 - Irritating to respiratory system and skin.

R41 - Risk of serious damage to eyes.

S-phrases(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S39 - Wear eye/face protection.

### 2.3 Other hazards

PBT criteria:

This mixture does not contain any substances that are assessed to be a PBT.

vPvB criteria:

This mixture does not contain any substances that are assessed to be a vPvB.

Other hazards which do not result in a classification:

None.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

Not applicable.

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### 3.2 Mixtures

Name	CAS-No.	EC-No.	Weight %	Classification according to 67/548/EEC or 1999/45/EC	Classification according to Regulation (EC) No. 1278/2008 (CLP)
Calcium Oxide	1305-78-8	215-138-9	68-85	Irritant; Xi, R37/38, R41	Skin irritation 2, H315 Eye damage 1, H318 Organ toxicity 3, H335
At the concentrations present in the mixture, the following constituents are not classified as dangerous according to Directive 67/548/EEC and are not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.					
Sodium Chloride	7647-14-5	231-598-3	0-3	Not applicable	Not applicable
The following constituents have Community workplace exposure limits, but at the concentrations present in the mixture are not classified as dangerous according to Directive 67/548/EEC and are not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.					
Silicon	7440-21-3	231-130-8	12-28	Not applicable	Not applicable

## SECTION 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

Skin:	Wash off with soap and plenty of water. If necessary seek medical advice.
Ingestion/Oral:	Never give anything by mouth to an unconscious person. Rinse mouth with water. DO NOT induce vomiting. Obtain medical attention immediately.
Inhalation:	If breathed in, move person to fresh air. If not breathing, give artificial respiration. Obtain medical attention immediately.
Eyes:	Rinse thoroughly with plenty of water for at least 15 minutes and obtain medical attention immediately. Clumps of calcium hydroxide formed by reaction with moisture and proteins in the eye are difficult to remove by irrigation.
General advice:	Consult a physician for all exposures except for minor instances. Show this safety data sheet to the doctor in attendance.

### 4.2 Most important symptoms and effect, both acute and delayed

Potential acute health effects:

Eyes:	Redness, pain, blurred vision, severe deep burns.
Skin:	Dry skin, redness, burning sensation, skin burns, pain.
Ingestion / Oral:	Burning sensation, abdominal pain, abdominal cramps, vomiting, diarrhoea.
Inhalation:	Cough, shortness of breath, headache, nausea, vomiting.

Symptoms may be delayed in cases of low level exposure

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Over-exposure symptoms:

Eyes: No data available.  
Skin: No data available.  
Ingestion / Oral: No data available.  
Inhalation: No data available.

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

No data available.

## SECTION 5. FIRE FIGHTING MEASURES

### 5.1 Extinguishing media

This product is not flammable, is non-combustible and inhibits the spread of flame.

Suitable extinguishing media: Alcohol resistant foam, dry chemical powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water and humidification of the material.

### 5.2 Special hazards arising from the substance or mixture

Fire and explosion hazard: Heat generated from contact with water may cause risk to flammable material.

Hazardous combustion products: Not applicable.

### 5.3 Advice for fire-fighters

Special precautions for fire-fighters: Avoid generation of dust.

Special protective equipment for fire-fighters: Wear Self-Contained Breathing Apparatus (SCBA) with chemical resistant gloves.

For Flammability Properties - see Section 9.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

For emergency responders: No data available.

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### 6.2 Environmental precautions

Contain any spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. Do not let product enter drains or ground water.

### 6.3 Methods and material for containment and cleaning up

Pick up and arrange disposal without creating dust. Use vacuum suction removal or shovel into bags, keep product dry. Keep in suitable (non-aluminium), closed containers for disposal.

### 6.4 Reference to other sections

Refer to Section 8 for information on personal protective equipment.

Refer to Section 13 for information on disposal considerations.

## SECTION 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

The contents of the cartridge are sealed inside a stainless steel welded vessel and do not present a hazard during normal handling and storage.

If the contents are exposed, avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

### 7.2 Conditions for safe storage, including any incompatibilities

Store in a cool place in original packaging until required for use. Keep cartridge tightly closed in a dry and well-ventilated place.

### 7.3 Specific end use(s)

This product must only be used for the purpose of gas abatement from etch and CVD semiconductor processing according to the instructions for use identified by the supplier. In no circumstances shall the product be used in other manufacturer's abatement equipment.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

Ingredient	ACGIH - TLV	OSHA - PEL	Occupational Exposure Limits EH40 (UK)
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	5.0 mg m <sup>-3</sup> - 8 hr TWA	2.0 mg m <sup>-3</sup> - 8 hr TWA
Silicon	15.0 mg m <sup>-3</sup> (total dust) 5.0 mg m <sup>-3</sup> (respirable fraction)	No data available	10.0 mg m <sup>-3</sup> (inhalable dust) 4.0 mg m <sup>-3</sup> (respirable dust)

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Country/Ingredient	Exposure Limit	Basis
<b>Australia</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment.
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA (Inspirable dust containing no asbestos and <1% crystalline silica).	
<b>Austria</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA 4.0 mg m <sup>-3</sup> - STEL	No data available
Silicon	No data available	
<b>Belgium</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA	
<b>Canada</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	Occupational Health and Safety Code - OEL
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA (total dust) 3.0 mg m <sup>-3</sup> - 8 hr TWA (respirable fraction)	
<b>China</b>		
Calcium Oxide	No data available	No data available
Silicon	No data available	
<b>Czech Republic</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA 4.0 mg m <sup>-3</sup> - STEL	No data available
Silicon	No data available	
<b>Denmark</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA	
<b>Finland</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	No data available	
<b>France</b>		
Calcium Oxide	No data available	No data available
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA	

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Country/Ingredient	Exposure Limit	Basis
<b>Germany</b>		No data available
Calcium Oxide	No data available	
Silicon	No data available	
<b>India</b>		Factories Act, 1948 Section 41F. Permissible limits of exposure of chemical and toxic substances
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	
Silicon	No data available	
<b>Ireland</b>		List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA (inhalable dust) 4.0 mg m <sup>-3</sup> - 8 hr TWA (respirable dust)	
<b>Israel</b>		No data available
Calcium Oxide	No data available	
Silicon	No data available	
<b>Italy</b>		No data available
Calcium Oxide	No data available	
Silicon	No data available	
<b>Japan</b>		No data available
Calcium Oxide	No data available	
Silicon	No data available	
<b>Malaysia</b>		No data available
Calcium Oxide	No data available	
Silicon	No data available	
<b>Netherlands</b>		No public limit values set
Calcium Oxide	Not applicable	
Silicon	Not applicable	
<b>Norway</b>		No data available
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA	
<b>Portugal</b>		No data available
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	
Silicon	No data available	

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Country/Ingredient	Exposure Limit	Basis
<b>Russian Federation</b>		
Calcium Oxide	No data available	No data available
Silicon	No data available	
<b>Saudi Arabia</b>		
Calcium Oxide	No data available	No data available
Silicon	No data available	
<b>Singapore</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	Workplace Safety & Health Regulations - PEL
Silicon	10.0 mg m <sup>-3</sup> - 8 hr TWA	
<b>South Korea</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	No data available	
<b>Spain</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	No data available	
<b>Sweden</b>		
Calcium Oxide	1.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	No data available	
<b>Switzerland</b>		
Calcium Oxide	2.0 mg m <sup>-3</sup> - 8 hr TWA	No data available
Silicon	3.0 mg m <sup>-3</sup> - 8 hr TWA	

### 8.2 Exposure controls

Appropriate engineering controls: The contents of the cartridge are not accessible to the user during normal operation. If handling of the contents is necessary, do so in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

Individual protection measures:

(for use, as appropriate, in circumstances where contents are exposed.)

Eye/Face Protection: Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).



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Hand/Skin Protection:	<p>Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.</p> <p>Immersion protection Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: &gt; 480 min</p> <p>Splash protection Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: &gt; 30 min</p>
Respiratory Protection:	<p>Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).</p>
Hygiene Measures	<p>As specified in 'Individual Protection Measures'.</p>
Other/General Protection:	<p>Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.</p>

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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1 Information on basic physical and chemical properties

The information presented below is for Calcium Oxide only.

Appearance	White granules	Melting point / freezing point	Melting point 2,572 / 4,662	°C / °F
Odour	None	Initial boiling point and boiling range	2,850 / 5,162	°C / °F
Odour threshold	Not applicable	Flash point	Not applicable	°C / °F
pH	12.5 - 12.8 at 1.65 g/l at 25 °C	Upper/lower flammability or explosive limits	No data available	°C / °F
Evaporation rate	Not applicable	Vapour pressure	No data available	mbar / Torr
Flammability (solid, gas)	No data available	Vapour density	No data available	g/cm <sup>3</sup>
Solubility(ies)	1.2 g/l at 25 °C - reacts to form Ca(OH) <sub>2</sub>	Relative density	3.3 at 25 °C	g/cm <sup>3</sup>
Partition coefficient: n-octanol/water	No data available	Auto-ignition temperature	No data available	°C / °F
Explosive properties	No data available	Decomposition temperature	No data available	°C / °F
Oxidising properties	No data available	Viscosity	Not applicable	cSt

#### 9.2 Other information

No additional information.

### SECTION 10. STABILITY AND REACTIVITY

#### 10.1 Reactivity

Calcium Oxide reacts exothermically with water to form Calcium Hydroxide Ca(OH)<sub>2</sub>, liberating approximately 1155 kJ/kg Calcium Oxide.

#### 10.2 Chemical stability

Stable at normal ambient temperatures (minus 40 °C to + 40 °C) and pressures under dry conditions.

#### 10.3 Possibility of hazardous reactions

None known.

#### 10.4 Conditions to avoid

Minimise exposure to air and moisture to avoid degradation.

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### 10.5 Incompatible materials

Must not be used for the treatment of gas streams other than those specified by the manufacturer. Avoid contact with water and acids. Storage in aluminium or brass containers in the presence of moisture will liberate Hydrogen.

### 10.6 Hazardous decomposition products

No known hazardous decomposition products.

Further information: Calcium Oxide absorbs moisture and Carbon Dioxide from air to form Calcium Carbonate, which is non-hazardous.

## SECTION 11. TOXICOLOGICAL INFORMATION

Unless noted otherwise, the data provided in this section relate to the individual component substances of the mixture and are given in support of the classification and labelling information provided in Section 2.

### 11.1 Information on toxicological effects

The information presented below is for Calcium Oxide only.

Acute toxicity:	Oral LD <sub>50</sub> > 2000 mg/kg (OECD 425, rat). Dermal LD <sub>50</sub> > 25000 mg/kg (Calcium Hydroxide, OECD 402, rabbit) by read across these results are also applicable to Calcium Oxide, since in contact with moisture Calcium Hydroxide is formed. Based on the available data, Calcium Oxide is not acutely toxic.
Irritation:	Skin - human -severe skin irritation. Based on experimental results, Calcium Oxide and the mixture are classified as Category 2 Skin irritation, H315.  Eyes (in vivo, rabbit) - risk of serious damage to eyes. Based on experimental results, Calcium Oxide and the mixture are classified as Category 1 Serious eye damage/eye irritation, H318.
Corrosivity:	Not applicable.
Sensitisation:	Calcium Oxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and is the essential requirement of calcium for human nutrition.
Repeat dose toxicity:	Not applicable.
Carcinogenicity:	Based on the available data, the classification criteria are not met.
Mutagenicity:	Based on the available data, the classification criteria are not met.
Specific Target Organ Toxicity (STOT) - single exposure	Inhalation - may cause respiratory irritation Based on experimental results, Calcium Oxide and the mixture are classified as Category 3 STOT - single exposure, H335.
STOT - repeated exposure	Based on the available data, the classification criteria are not met.
Aspiration hazard	Based on the available data, the classification criteria are not met.

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Toxicity for reproduction: Based on the available data, the classification criteria are not met.

### Information on likely routes of exposure

No data available.

### Symptoms related to the physical, chemical and toxicological characteristics

Eye Effects: Redness, pain, blurred vision, severe deep burns.

Skin Effects: Dry skin, redness, burning sensation, skin burns, pain.

Ingestion/Oral Effects: Burning sensation, abdominal pain, abdominal cramps, vomiting, diarrhoea.

Inhalation Effects: Cough, shortness of breath, headache, nausea, vomiting.

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

No data available.

### Other information

No data available.

## SECTION 12. ECOLOGICAL INFORMATION

The information presented below is for Calcium Oxide only.

There are no known incidents of ecological damage, nor would be this be expected in normal use.

### 12.1 Toxicity

Calcium oxide Toxicity to fish. LC<sub>50</sub> - Cyprinus carpio (Carp) - 1,070 mg/L - 96 h

### 12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

### 12.3 Bioaccumulative potential

No data available.

### 12.4 Mobility in soil

No data available.

### 12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

### 12.6 Other adverse effects

No data available.

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste treatment methods

Product: Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Packaging: Dispose of as unused product.

### SECTION 14. TRANSPORT INFORMATION

#### 14.1 UN number

ADR/RID	IMDG	IATA	United States DOT
Not applicable	Not applicable	UN1910	Not applicable

#### 14.2 UN proper shipping name

ADR/RID	IMDG	IATA	United States DOT
Not applicable	Not applicable	Calcium Oxide mixture	Not applicable

#### 14.3 Transport hazard class

ADR/RID	IMDG	IATA	United States DOT
Not applicable	Not applicable	8	Not applicable

#### 14.4 Packing group

ADR/RID	IMDG	IATA	United States DOT
Not applicable	Not applicable	III	Not applicable

#### 14.5 Environmental hazards

ADR/RID	IMDG	IATA	United States DOT
Not applicable	Not applicable	Not applicable	Not applicable

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### 14.6 Special precautions for user

ADR/RID	IMDG	IATA	United States DOT
Not applicable	Not applicable	Not applicable	Not applicable

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

Not applicable.

## SECTION 15. REGULATORY INFORMATION

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

No additional provisions or regulations identified.

### 15.2 Chemical Safety Assessment

No chemical Safety Assessment has been carried out for this mixture by the supplier.

## SECTION 16. OTHER INFORMATION

This SDS is compiled in accordance with ANSI Z400.1, Regulation (EC) No 1907/2006 (as amended by Regulation No 453/2010) concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

### 16.1 Full text of abbreviated statements and phrases

All relevant risk/safety phrases and hazard/precautionary statements are given in full in Section 2.2.

### 16.2 NFPA / HMIS hazard codes

NFPA Hazard codes		HMIS Hazard codes		Rating System
Health	3	Health	3	0 = No Hazard
Flammability	0	Flammability	0	1 = Slight Hazard
Instability	1	Physical Hazard	1	2 = Moderate Hazard
		Personal Protection	E	3 = Serious Hazard
				4 = Severe Hazard

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### 16.3 Sources of information for this data sheet

- The ECHA database on registered substances -  
<http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances>
- The ECHA classification and labelling inventory -  
<http://echa.europa.eu/web/guest/regulations/clp/cl-inventory>
- OECD - eChemPortal -  
[http://www.chemportal.org/chemportal/index?pageID=0&request\\_locale=en](http://www.chemportal.org/chemportal/index?pageID=0&request_locale=en)
- ESIS : European chemical Substances Information System -  
<http://esis.jrc.ec.europa.eu/>
- International Programme on Chemical Safety - INCHEM -  
<http://www.inchem.org/>

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]

Classification according to Regulation (EC) Nr.1272/2008	Classification Procedure
Category 2 Skin irritation. H315	Calculation method
Category 1 Serious eye damage/eye irritation, H318	Calculation method
Category 3 STOT - single exposure, H335	Calculation method

- Training advice - All training requirements on usage of this product should be addressed to the supplier using the contact details in Section 1.

### 16.4 Glossary

ACGIH - American Conference of Governmental Industrial Hygienists; ADN - European agreement concerning the international carriage of dangerous goods by inland waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; ATE - Acute Toxicity Estimate; CAS No. - Chemical Abstracts Service number; CEN - European Committee for Standardisation; CLP - Classification Labelling Packaging Regulation ; Regulation (EC) No 1272/2008; CVD - Chemical vapour deposition; EC No. - EINECS and ELINCS Number (see also EINECS and ELINCS); EC<sub>50</sub> - Median effective concentration; ECHA - European Chemicals Agency; EINECS - European Inventory of Existing Commercial Substances; ELINCS - European List of Notified Chemical Substances; IATA - International carriage of dangerous goods by air; IMDG - International carriage of dangerous goods by sea; LC<sub>50</sub> - Median lethal concentration; LD<sub>50</sub> - Median lethal dose; MARPOL - International Convention for the Prevention of Pollution From Ships; NIOSH - National Institute for Occupational Safety and Health (US); OECD - Organisation for Economic Co-operation and Development; OEL - Occupational exposure limit; PBT - Persistent, bioaccumulative, toxic chemical; PEL - Permissible exposure limit; RID - International carriage of dangerous goods by rail; STEL - Short term exposure limit, 15 minute reference period; STOT - Specific target organ toxicity; TLV - Threshold limit value; TWA - Time weighted average, 8 hour reference period; vPvB - Very persistent, very bioaccumulative chemical.



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### 16.5 Revisions

April 2010 - Data Sheet updated to reflect the latest supplier safety information and the latest regulatory information.

June 2012 - Data Sheet updated to reflect current regulatory information.

December 2013 - Data Sheet updated to conform to Regulation (EC) No 1907/2006 (as amended by Regulation No 453/2010) and GHS.

May 2014 - Global formatting updates.

January 2016 - Contact details updated. Revision date not changed to preserve 2-yearly SDS review date.

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Although the information and recommendations in this data sheet are to the best of our knowledge correct, it is recommended that you make your own determination of the material's suitability for your purpose before you use it. The information contained in this data sheet has been reproduced from the manufacturers data; accuracy of this information is the responsibility of the manufacturer. It should not, therefore, be construed as guaranteeing any specific property of the product.