according to Regulation (EC) No. 1907/2006



ARDROX 9D4A

Version: 5.0 Revision Date 07.03.2016 Print Date 18.03.2016

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

1.1 Product identifier

Trade name : ARDROX 9D4A

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

Use of the Sub-: Developer

stance/Mixture

Recommended restrictions : None known.

on use

1.3 Details of the supplier of the safety data sheet

Company : Chemetall Ltd

Denbigh Road

Bletchley Milton Keynes MK1 1PB

Telephone : 01908 649333 Telefax : 01908 373939

Contact person product safety

Telephone : +49(0)6971653581 E-mail address : msds.de@chemetall.com

1.4 Emergency telephone number

Emergency telephone

: 01908 649333

number

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.3 Other hazards

The information required is contained in this Material Safety Data Sheet.

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SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable

3.2 Mixtures

Chemical nature : Mixture of organic and inorganic salts.

Hazardous components

Chemical Name	CAS-No. EC-No.	Classification (REGULATION (EC)	Concentration [%]				
	Registration number	No 1272/2008)					
Substances with a workplace exposure limit :							
Pentaerythritol	115-77-5 204-104-9 01-2119473985-20	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.	>= 25 - < 50				
Magnesium oxide	1309-48-4 215-171-9	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.	>= 10 - < 25				
Silicon dioxide	112945-52-5 231-545-4 01-2119379499-16	Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.	>= 10 - < 25				

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : First-aid crew: Ensure self-protection.

Move out of dangerous area.

If inhaled : Move to fresh air.

If symptoms persist, call a physician.

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In case of skin contact : Wash off with soap and plenty of water.

If symptoms persist, call a physician.

: Rinse immediately with plenty of water, also under the eyelids. In case of eye contact

Consult a physician.

If swallowed : Rinse mouth.

> Do NOT induce vomiting. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

: No information available. **Symptoms**

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

For specialist advice physicians should contact the Poisons

Information Service.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO2)

Dry powder

Alcohol-resistant foam

Water spray

Unsuitable extinguishing : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-

fighting

: May form toxic gases on heating or in case of fire.

Carbon monoxide Carbon dioxide (CO2)

5.3 Advice for firefighters

for firefighters

Special protective equipment : In the event of fire, wear self-contained breathing apparatus.

Further information : Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Wear personal protective equipment.

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6.2 Environmental precautions

Environmental precautions : Do not flush into surface water or sanitary sewer system.

Avoid subsoil penetration.

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up : Ensure adequate ventilation.

Avoid dust formation.

Sweep up and shovel into suitable containers for disposal.

6.4 Reference to other sections

For further information see Section 8 of the safety data sheet. For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.

Have eye wash bottle or eye rinse ready at the work place.

Avoid dust formation.

To avoid risks to man and the environment, comply with the

instructions for use.

Advice on protection against

fire and explosion

: Potential for dust explosion.

Dust may form explosive mixture in air.

Keep away from sources of ignition - No smoking.

Take precautions against dust explosion. Normal measures for preventive fire protection.

Dust explosion class : St1

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

: Keep tightly closed in a dry, cool and well-ventilated place.

Protect from moisture.

Store in a place accessible by authorized persons only.

Protect from frost, heat and sunlight.

Storage period : 36 month

Storage temperature : 5 - 40 °C

7.3 Specific end use(s)

Specific use(s) : Developer

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value	Control param- eters	Update	Basis
Pentaerythritol	115-77-5	TWA	10 mg/m3 inhalable dust	2011-12-01	GB EH40
Further information	airborne du ods describ and inhalab The COSHI sent at a cc 4 mg.m-3 8 people are exposure tc Most indust fate of any that it elicits for limit-sett Inhalable di during brea approximat tions and ex	H definition of a substance hazardous to health includes dust of any kind when pre- oncentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if a exposed above these levels. Some dusts have been assigned specific WELs and to these must comply with the appropriate limit. Strial dusts contain particles of a wide range of sizes. The behaviour, deposition and a particular particle after entry into the human respiratory system and the body response as, depend on the nature and size of the particle. HSE distinguishes two size fractions titing purposes termed 'inhalable' and 'respirable'. Sust approximates to the fraction of airborne material that enters the nose and mouth athing and is therefore available for deposition in the respiratory tract. Respirable dust tes to the fraction that penetrates to the gas exchange region of the lung. Fuller defini- explanatory material are given in MDHS14/3. Sets contain components that have their own assigned WEL, all the relevant limits should			
		TWA	4 mg/m3 Res- pirable dust	2011-12-01	GB EH40
Further information	airborne du ods describ and inhalab The COSHI sent at a cc 4 mg.m-3 8 people are exposure tc Most indust fate of any that it elicits for limit-sett Inhalable di during brea approximat tions and ex	15: For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit. Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3. Where dusts contain components that have their own assigned WEL, all the relevant limits should			

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		STEL	20 mg/m3 inhalable dust	2011-12-01	GB EH40
Further infor- mation	airborne of ods descrand inhala The COSI sent at a 4 mg.m-3 people arr exposure Most indu fate of any that it elic for limit-se Inhalable during bre approximations and	lust which will ibed in MDHS able dust HH definition of concentration 8-hour TWA exposed about these must strial dusts correcting purposed dust approximating and is attes to the fra explanatory notes contain contai	be collected when sand 14/3 General methods of a substance hazardo in air equal to or greate of respirable dust. This ove these levels. Some a comply with the appropriation particles of a widurticle after entry into the office termed 'inhalable' and the refore available for ction that penetrates to the traction of a therefore available for chaterial are given in ME	npling is undertaken in for sampling and graus to health includes er than 10 mg.m-3 8-h means that any dust e dusts have been assipriate limit. The range of sizes. The e human respiratory so the particle. HSE distinguishers with the deposition in the respirate respiratory in the gas exchange respirate/3.	ust are those fractions of accordance with the meth- vimetric analysis of respirable dust of any kind when pre- four TWA of inhalable dust or will be subject to COSHH if igned specific WELs and behaviour, deposition and system and the body response inguishes two size fractions enters the nose and mouth iratory tract. Respirable dust gion of the lung. Fuller definit, all the relevant limits should
Magnesium oxide	1309-48-4	TWA	10 mg/m3 Mag- nesium inhala- ble dust	2011-12-01	GB EH40
Further infor- mation	airborne of ods descrand inhala The COSI sent at a 4 mg.m-3 people are exposure Most indufate of any that it elic for limit-se Inhalable during bre approximations and Where dube compli	lust which will ibed in MDHS able dust HH definition aboncentration 8-hour TWA be exposed about to these must strial dusts correction purpose dust approxing partial parts, depend or eating purpose dust approxing and is stes to the frame explanatory not strong in contain	be collected when san 614/3 General methods of a substance hazardo in air equal to or greate of respirable dust. This ove these levels. Some comply with the appro- ontain particles of a wid article after entry into the in the nature and size of its termed 'inhalable' an nates to the fraction of therefore available for ction that penetrates to naterial are given in ME amponents that have the	npling is undertaken in for sampling and graves to health includes out to health includes out to health includes out to health includes out to health and use that any dust have been assignate limit. The range of sizes. The e human respiratory so the particle. HSE dist d'respirable', airborne material that deposition in the respirate gas exchange respirate/3. The particle is that deposition in the respirate gas exchange respirate/3. The particle is that deposition in the respirate gas exchange respirate/3.	ust are those fractions of accordance with the meth- vimetric analysis of respirable dust of any kind when pre- lour TWA of inhalable dust or will be subject to COSHH if igned specific WELs and behaviour, deposition and system and the body response inguishes two size fractions enters the nose and mouth iratory tract. Respirable dust gion of the lung. Fuller defini- —, all the relevant limits should imes the long-term exposure

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Further infor- mation	:	airborne dus ods describe and inhalabl The COSHI-sent at a coor 4 mg.m-3 8-people are exposure to Most industriate of any pthat it elicits for limit-setti Inhalable duduring breat approximate tions and ex Where dusts be complied	st which will led in MDHS' e dust definition on centration in centration in the central dusts contact acticular para, depend on ng purposes at approximand is the central cent	be collected when sand 14/3 General methods of a substance hazardor in air equal to or greater frespirable dust. This we these levels. Some comply with the appropriation particles of a widuticle after entry into the nature and size of a termed 'inhalable' anates to the fraction of a therefore available for the that penetrates to aterial are given in ME in mponents that have the	for sampling and gravir bus to health includes duer than 10 mg.m-3 8-hou means that any dust with dusts have been assignated imit. The range of sizes. The been human respiratory system that particle. HSE distinct d'respirable'. The particle in the respiration of the respiration of the respiration of the sample region of the past exchange region of the past exchang	accordance with the meth- netric analysis of respirable ust of any kind when pre- ur TWA of inhalable dust or Il be subject to COSHH if
		Magnesium	TWA	4 mg/m3 Mag- nesium Fumes	2011-12-01	GB EH40
Further infor- mation		airborne dus ods describe and inhalabl The COSHI-sent at a cool 4 mg.m-3 8-people are exposure to Most industriate of any puthat it elicits for limit-setti Inhalable du during breat approximate tions and ex Where dusts be complied Where no syshould be us	st which will led in MDHS' e dust definition on centration in centration in the definition of the service definition of th	be collected when sand 14/3 General methods of a substance hazardon air equal to or greated frespirable dust. This we these levels. Some comply with the appropriation particles of a wid ticle after entry into the nature and size of a termed 'inhalable' anates to the fraction of a therefore available for tion that penetrates to aterial are given in ME inponents that have the	for sampling and gravir bus to health includes duer than 10 mg.m-3 8-hou means that any dust with dusts have been assignated priate limit. The range of sizes. The been human respiratory system the particle. HSE disting d'respirable'. The particle in the respiration of the respiration of the respiration of the system.	accordance with the meth- netric analysis of respirable ust of any kind when pre- ur TWA of inhalable dust or Il be subject to COSHH if
Silicon dioxide	1 ²	Magnesium 12945-52-	TWA	6 mg/m3 Silica inhalable dust	2011-12-01	GB EH40
Further infor-		15: For the r	ournoses of	these limits respirable	dust and inhalable dus	t are those fractions of

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and inhalable dust

The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit.

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Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3.

Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with.

Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

Silica

TWA

2.4 mg/m3 Silica 2011-12-01 Respirable dust

GB EH40

Further information

15: For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable

The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit.

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Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with.

Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

Silica

DNEL/DMEL

Pentaerythritol : End Use: Workers DNEL

Exposure routes: Inhalation

Potential health effects: Long-term systemic effects

Value: 3.5 mg/m3

End Use: Workers DNEL Exposure routes: Inhalation

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Potential health effects: Acute systemic effects

Value: 7 mg/m3

End Use: Workers DNEL Exposure routes: Skin contact

Potential health effects: Long-term systemic effects

Value: 1 mg/kg bw/day

End Use: Workers DNEL Exposure routes: Skin contact

Potential health effects: Acute systemic effects

Value: 2 mg/kg bw/day

PNEC

Pentaerythritol : Fresh water

Value: 1 mg/l

Marine water Value: 0.1 mg/l

Intermittent use/release

Value: 1 mg/l

Sewage treatment plant

Value: 50 mg/l

8.2 Exposure controls

Engineering measures

Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Avoid dust formation.

Personal protective equipment

Respiratory protection : In case of insufficient ventilation wear suitable respiratory

equipment.

Recommended Filter type:

Half mask with a particle filter P1 (EN 143).

Hand protection : Chloroprene

Nitrile rubber

Protective gloves complying with EN 374.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of

cuts, abrasion, and the contact time.

Eye protection : Safety glasses with side-shields conforming to EN166

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Skin and body protection : Chemical resistant protective clothing according to DIN EN

13034 (Type 6)

Hygiene measures : Take off contaminated clothing and shoes immediately.

Keep away from food, drink and animal feedingstuffs.

Wash hands before breaks and immediately after handling the

product.

Avoid contact with skin and eyes.

Do not breathe dust.

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.

Avoid subsoil penetration.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : powder Colour : white

Odour : odourless

Flash point : Not applicable

Lower explosion limit : 250,000 mg/m3

Method: DIN EN 14034

Bulk density : 110 kg/m3

Water solubility : insoluble

9.2 Other information

Explosivity : Potential for dust explosion.

Dust can form an explosive mixture in air.

Maximum explosion overpressure

Method: DIN EN 14034

6,0 bar

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Minimum ignition energy : > 5,000 mJ

Method: VDI 2263, page 1, 2.1.2

Dust deflagration index (Kst) : 49 m.bar/s

Method:DIN EN 14034

Directive 1999/13/EC on the

limitation of emissions of volatile organic compounds

: Value: 0 %

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Potential for dust explosion.

Dust can form an explosive mixture in air.

10.4 Conditions to avoid

Conditions to avoid : Keep away from open flames, hot surfaces and sources of

ignition.

Protect from moisture. Avoid dust formation. Protect from frost.

10.5 Incompatible materials

Materials to avoid : Strong acids and oxidizing agents

10.6 Hazardous decomposition products

Risk of decomposition. : No decomposition if used as directed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

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Acute oral toxicity

Pentaerythritol : LD0: > 5,110 mg/kg

Species: Rat

Method: OECD Test Guideline 401

Magnesium oxide : LD50: > 5,000 mg/kg

Species: Rat

Silicon dioxide : LD50: > 10,000 mg/kg

Species: Rat

Information taken from reference works and the literature.

Acute dermal toxicity

Pentaerythritol : LD50: < 10,000 mg/kg

Species: Rabbit

Method: OECD Test Guideline 402

Magnesium oxide : LD50: > 2,000 mg/kg

Species: Rabbit

Silicon dioxide : LD50: > 5,000 mg/kg

Species: Rabbit

Information taken from reference works and the literature.

Skin corrosion/irritation

Skin irritation : May cause skin irritation in susceptible persons.

Serious eye damage/eye irritation

Eye irritation : Dust contact with the eyes can lead to mechanical irritation.

Respiratory or skin sensitisation

Sensitisation : No data available

SECTION 12: Ecological information

12.1 Toxicity

Ecotoxicology studies for the product are not available.

Toxicity to fish

Magnesium oxide : No data available

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Silicon dioxide : LC50: > 10,000 mg/l

Exposure time: 96 h

Species: Brachydanio rerio (Zebra danio) Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Silicon dioxide : EC50: > 10,000 mg/l

Exposure time: 24 h

Species: Daphnia magna (Water flea) Method: OECD Test Guideline 202

12.2 Persistence and degradability

Biodegradability : No data available

12.3 Bioaccumulative potential

Bioaccumulation : Bioaccumulation is unlikely.

12.4 Mobility in soil

Distribution among environ-

: No data available

mental compartments

12.5 Results of PBT and vPvB 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 Other adverse effects

Additional ecological infor-

: slightly water endangering

mation

Do not flush into surface water or sanitary sewer system.

Avoid subsoil penetration.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Dispose of in accordance with local regulations.

Contaminated packaging : Dispose of as unused product.

Waste Code : Waste codes should be assigned by the user, preferably in

discussion with the waste disposal authorities.

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SECTION 14: Transport information

ADR

Not dangerous goods

IATA

Not dangerous goods

IMDG

Not dangerous goods

RID

Not dangerous goods

SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation

(Article 59).

Water contaminating class

(Germany)

: Not applicable

: WGK 1 slightly water endangering

VWVWS A4

Other regulations : The product is classified and labelled in accordance with EC

directives or respective national laws.

Regional or national implementations of GHS may not imple-

ment all hazard classes and categories.

15.2 Chemical Safety Assessment

This product is not classified as hazardous therefore an Exposure Scenario is not necessary.

SECTION 16: Other information

Further information

The information provided is based on our current knowledge and experience and apply to the product

according to Regulation (EC) No. 1907/2006



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as delivered. Regarding the product properties, these are not guaranteed. The delivery of this safety datasheet does not free the recipient of the product from his own responsibility to follow the relevant rules and regulations concerning this product.

This data sheet contains changes from the previous version in section(s): 3