



SAFETY DATA SHEET

CALDE® GUN MW STRONG LITE

Version: 20
MAI30070

The following Safety Data Sheet has been created according to the Regulation (EC) No 1272/2008 [CLP/GHS], the Regulation (EU) No 453/2010 and the Commission Regulation (EU) 2015/830 (28th of May 2015) on compilation of e-SDS.

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

1.1. Product identifier

CALDE® GUN MW STRONG LITE

1.1.1. Dates and Modifier of the Safety Data Sheet

Creation Date 09/06/2017 (DD/MM/YY)

Revision Date: 09/06/2017

Modifier JP Targe

1.1.2. SDS (Safety Data Sheet) status:

New

1.2. Relevant identifier uses of the substances or mixture and uses advised against:

1.2.1. Relevant identified uses:

Usages of the product according to the ECHA (European Chemical Agency) - Guidance R.12 Use descriptor system - draft version 2.0
SU10; 13+NACE C23.2+PC 10+PROC 1; 2; 3; 4; 5; 8a; 9; 13; 14; 19; 21; 22; 23; 24; 26+ERC 2; 3; 5+AC 12-1; 12-2
Unshaped refractory material
Restricted to industrial or professional users for application as safety or wear linings and maintenance of both in all industrial devices at temperatures > 1000°C.

1.2.2. Uses advised against:

Non relevant.

1.3. Details of the supplier of the safety data sheet:

1.3.1. Supplier:

EUROPEAN ECONOMIC COMMUNITY :

Calderys
17, rue de Copenhagen – Bât. F
F-38070 Saint Quentin Fallavier - France
Phone: +33 (0)4 74 99 99 64 - Fax: +33 (0)4 74 99 99 56

1.3.5. E-mail:

If another updated SDS is needed, please contact your local CALDERYS commercial desk.
For any precision about the content of this MSDS, please refer to the point 1.3.6.

1.3.6. National contact's name:

See local contact for your country at §16 - Point 16.9.
www.calderys.com

1.4. Emergency telephone number:

UK: The UK National Poisons Emergency number is 0870 600 6266 - (Outside the UK: +44 870 600 6266)
See enclosed annex for Emergency telephone

1.5. Opening hours (if not 24/24 h):

Non relevant.

SECTION 2: Hazards identification

2.1 Classification of the substance or the mixture:



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2.1.0. Substances linked to the Classification of the product

Non relevant.

Not Classified

This product contains less than 1% of: Alpha-quartz (CSFF: Crystalline Silica Fine Fraction) - CAS Nr. 14808-60-7

2.1.1. Classification according to Regulation:

(EC) No 1272/2008 [CLP/GHS]

This product does not meet the criteria for classification in any hazard class.

- 2.1.1.1 Other:

Non relevant.

2.1.3. Additional information:

For full text of H, EUH-phrases: see section 16.

2.2. Label elements:

2.2.1.2. Signal word:

Non relevant.

2.2.2.1. Symbol(s) in black/white or colour according to the Regulation:

(EC) No 1272/2008 [CLP/GHS]

Non relevant.

2.2.7. Authorization number(s) from ECHA:

Non relevant.

2.2.8. Labelling according to the Regulation:

(EC) No 1272/2008 [CLP/GHS]

Non relevant.

2.2.9. GHS, Precautionary statement phrases (P)

Even if this product is not classified, please find below the -P- phrases linked to the substances used.

2.2.9.1. GHS, Precautionary statements — Prevention

P260: Do not breathe dust.

2.2.9.2. GHS, Precautionary statements — Response

Non relevant.

2.2.9.3. GHS, Precautionary statements — Storage

Non relevant.

2.2.9.4. GHS, Precautionary statements — Disposal

P501: Dispose of contents/containers in accordance with local regulation

2.3. Other hazards:

Unknown at that date.

2.3.1. SVHC (Substance of Very High Concern):

No.

2.3.2. CMR : Carcinogenic, Mutagenic or Toxic for Reproduction

No.

2.3.3. PBT : Persistent, Bioaccumulative and Toxic

No.

2.3.4. vPvB: very Persistent very Bioaccumulative

No.

2.3.5. POP: Persistent Organic Pollutant

No.

2.3.6. Formation of air contaminants during hardening or processing:

No.

2.3.7. Dust explosion hazard (VDI 2263):

Unknown at that date.

SECTION 3: Composition / Information on ingredients

3.1. Substance:

3.2. Mixture:

3.2.1. Non hazardous components



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Component	CAS N° / EC N°	Weight %
Chamotte - Nr. REACH. 01-2119527779-22	CAS : 92704-41-1 Einecs : 296-473-8	>=50 <100
Alumina cement - REACH: Substance exempted in accordance with Annex V.7	CAS : 65997-16-2 Einecs : 266-045-5	>=25 <50
Alpha-quartz - REACH: Substance exempted in accordance with Annex V.7	CAS : 14808-60-7 Einecs : 238-878-4	>=2.5 <10

3.2.2. Hazardous components

Component	CAS N° / EC N°	Weight %
Alpha-quartz (CSFF) - REACH: Substance exempted in accordance with Annex V.7 STOT RE1; H372	CAS : 14808-60-7 Einecs : 238-878-4	<1

SECTION 4: First aid measures

4.1. Description of first aid measures

4.1.1. Eyes:

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

4.1.2. Skin:

Wash with soap and water, if irritation persists seek medical advice.
If skin irritation or rash occurs: Get medical advice/attention.

4.1.3. Ingestion:

Due to the physical form of the product, ingestion is considered an unlikely route of entry.
If swallowed, rinse mouth with water (only if the person is conscious).
If swallowed, drink copious amount of water (at least 0,5 liter), provided fresh air and seek medical advice immediately.

4.1.4. Inhalation:

If there is a sensation of nausea or dizziness, remove to fresh air and seek medical attention.
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

Difficulty to breathe.
Dust may cause temporary irritation of upper respiratory tract and slight irritation of eyes and nose

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

Non relevant.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

5.1.1. Suitable fire-fighting methods :

In case of fire use water based extinguishers or hosepipe.

5.1.2. Unsuitable extinguishing media:

Non relevant.

5.2. Special hazards arising from the substance or mixture

In standard storage conditions, non-combustible, non-explosive and non-flammable.

5.2.1. Hazardous decomposition products

None

5.3. Advice for firefighters

5.3.1. Personal precautions:



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Personal precautions : see Section 8.
Fire fighter clothing according to European standard EN469.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.1.1. Protective equipment:

Personal precautions : see Section 8.

6.1.1.2. Emergency procedures

Non relevant.

6.1.2. For emergency responders

Non relevant.

6.2. Environmental precautions

Prevent access to water table, running or stagnant water, or drains.

6.3. Methods and material for containment and cleaning up

6.3.1. Appropriate containment techniques may include any of the following:

6.3.1. - (a) bunding, covering of drains;

Non relevant.

6.3.1. - (b) capping procedures.

Non relevant.

6.3.2. Appropriate advices on how to clean-up a spill. Appropriate clean-up procedures may include any of the following:

6.3.2. - (a) neutralisation techniques;

Non relevant.

6.3.2. - (b) decontamination techniques;

Non relevant.

6.3.2. - (c) adsorbent materials;

Non relevant.

6.3.2. - (d) cleaning techniques;

Avoid dust formation.

Avoid dry sweeping and use water spraying or ventilated vacuum cleaning system to prevent dust formation.

6.3.2. - (e) vacuuming techniques;

Remove by vacuum cleaner or mechanical means.

6.3.2. - (f) equipment required for containment/clean-up (include the use of non-sparking tools and equipment where applicable).

Non relevant.

6.3.3. Other information relating to spills and releases:

6.3.3.1. Non allowed techniques:

Non relevant.

6.4. Reference to other sections

6.4.1. References:

Personal precautions : see Section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling:

7.1.1. Protective measures:

7.1.1.- (a) Measures to prevent fire:

Non relevant.



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7.1.1.- (b) Measures to prevent aerosol and dust generation:

Avoid bulk handling susceptible to create dust.

7.1.1.- (c) Measures to protect environment:

Prevent access to water table, running or stagnant water, or drains.

7.1.2. Advice on general occupational hygiene:

When using do not eat, drink or smoke.

7.2. Conditions for safe storage, including any incompatibilities:

7.2.1. Technical measures and storage conditions:

Engineering measures, such as local dust extraction, to ensure compliance with Occupational Exposure Limits.

Avoid dust formation.

In case of insufficient ventilation, wear suitable respiratory equipment. Your supplier can advise you on safe handling, please contact him.

Avoid bulk handling susceptible to create dust.

Stacking height: up to 2 pallets maximum.

Clean area frequently to avoid buildup of dust

7.2.2. Recommended packing:

Multi-ply paper sacks or big-bags.

Plastic shrink or cling film.

Wooden pallet with shrink film.

7.2.3. Requirements for storage rooms and vessels:

Store in dry conditions

Store the bagged products in a way preventing accidental bursting.

Do not store outside.

Avoid contact with incompatibles mentioned under item 10

7.2.4. Storage class (national):

Unknown at that date.

7.2.5. Further information on storage conditions:

Always keep in the original packaging.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Substance	CAS N° / EC N°	L.T.E - 8 hr TWA mg/m3
Chamotte - Nr. REACH. 01-2119527779-22	CAS : 92704-41-1 Einecs : 296-473-8	No data
Alumina cement - REACH: Substance exempted in accordance with Annex V.7	CAS : 65997-16-2 Einecs : 266-045-5	5
Alpha-quartz - REACH: Substance exempted in accordance with Annex V.7	CAS : 14808-60-7 Einecs : 238-878-4	0.1
Alpha-quartz (CSFF) - REACH: Substance exempted in accordance with Annex V.7 STOT RE1; H372	CAS : 14808-60-7 Einecs : 238-878-4	0.075

8.2. Exposure Controls:

The chart above mentions the lowest exposure limit values known in the EU for each substance.

All the values indicated in the chart above are available in the (Worldwide) GESTIS database:

<http://limitvalue.ifa.dguv.de/>

Read also:

Austria: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/at.pdf:

Belgium: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/be.pdf:

France: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/fr.pdf:

Germany: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/ags.pdf:

Hungary: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/hu.pdf:



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Poland: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/pl.pdf:

Spain: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/es.pdf:

The Netherlands: <http://www.ser.nl/nl/taken/adviserende/grenswaarden.aspx>:

United Kingdom: http://www.dguv.de/medien/ifa/en/gestis/limit_values/pdf/uk.pdf:

Some values, not indicated in the GESTIS database, are coming from list placed in the 3 European directives dedicated to indicative occupational exposure limit values. Please find below their references.

1st list: DIRECTIVE 2000/39/EC / 2nd list: DIRECTIVE 2006/15/EC / 3rd list: DIRECTIVE 2009/161/EU

Approved Occupational Exposure values indicated for total inhalable and/or respirable dust according to GESTIS.

Customers are advised to check the limit values indicated, that could have been up-dated (in GESTIS) since the creation of this SDS.

The OEL of the CSFF (Crystalline Silica Fine Fraction) is officially 0.1 mg/m³ (Letter Feb. 2013 - IMA /Ceram-unie)

Contains some substances without any approved Occupational Exposure values

8.2.0. DNEL (Derived no effect level)

Unknown at that date.

8.2.0.1. Substance:

Non relevant.

8.2.1. Appropriate engineering controls

Provide appropriate exhaust ventilation and filtering at the places where dust can be generated.

Provide adequate ventilation, including appropriate local extraction, to ensure that the defined workplace exposure limit is not exceeded.

8.2.2. Individual protection measures, such as personal protective equipment

8.2.2.1. Good occupational hygiene practices

For details about the following HS personal devices, please see the annex dedicated to. (Section .17)

8.2.2.2. Personal Protective Equipment

8.2.2.2. (a) Eye/face protection

Wear safety glasses with lateral protection (166 rev. S4KN2)



8.2.2.2. (b) Skin protection

Standard industrial clothing is suitable for installations at ambient temperatures (ISO 6942)
Do not shake the working clothes. Do not remove dust with compressed air.



8.2.2.2. (c) Hands:

Wear leather security gloves (EN 388-2003).



8.2.2.2. (d) Respiratory protection

Maintain adequate ventilation whenever dust is present.

Consult the local reglementation.

Wear appropriate anti-dust mask (EN149:2009 FFP3)



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Use a filtering respiratory device, in case of airborne concentrations are expected to exceed exposure limits.



8.2.3. Environmental exposure controls

Prevent access to water table, running or stagnant water, or drains during installation or during washing the tools used for installation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Dry mixture of aggregates and fine powders
Color:	Grey
Odour:	No particular odour
Melting point	> 1300 °C
Packing Density (g/cm³) :	1.14
Vapour density:	Non relevant.
pH:	7 < pH < 10, after water has been added.
Segregation:	Non relevant.
Boiling point:	Non relevant.
Flash point:	Non relevant.
Inflammability:	No.
Explosive properties:	No.
Combustive properties:	No.
Solubility solvent:	No.
Partition coefficient n-octanol/water:	Non relevant.
Viscosity:	Non relevant.
Hydrosolubility:	Lower than 2,5%

9.2. Other informations:

All non relevant data are linked to the nature of our products - mineral mixtures.

SECTION 10: Stability and reactivity

10.1. Reactivity

No.

10.2. Chemical stability

Mixture of inert minerals.

Chemically stable refractory product

10.3. Possibility of hazardous reactions

Chemically stable refractory product

No hazards to our knowledge

10.4. Conditions to avoid

No hazards to our knowledge



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Chemically stable refractory product

10.5. Incompatible materials

No hazards to our knowledge

Chemically stable refractory product

10.6. Hazardous decomposition products

None

SECTION 11: Toxicological information

Substance

CAS N° / EC N°

Alpha-quartz (CSFF) - REACH: Substance exempted in accordance with Annex V.7
STOT RE1; H372

CAS : 14808-60-7

Einecs : 238-878-4

11.1. Information on toxicological effects.

11.1.1. Substances.

Non relevant.

11.1.1.1. The relevant hazard classes for which information shall be provided, are:

Non relevant.

11.1.2. Mixtures.

Non relevant.

11.1.2.1. The relevant effects classes for which information shall be provided, are:

Non relevant.

11.1.2.1. - (a) acute toxicity:

Non relevant.

11.1.2.1. - (b) skin corrosion/irritation:

Non relevant.

11.1.2.1. - (c) serious eye damage/irritation:

Non relevant.

11.1.2.1. - (d) respiratory or skin sensitisation:

Non relevant.

11.1.2.1. - (e) germ cell mutagenicity:

Non relevant.

11.1.2.1. - (f) carcinogenicity:

Non relevant.

11.1.2.1. - (g) reproductive toxicity:

Non relevant.

11.1.2.1. - (h) STOT-single exposure:

Non relevant.

11.1.2.1. - (i) STOT - repeated exposure:

Non relevant.

11.1.2.1. - (j) aspiration hazard:

Non relevant.

11.1.2.2.1. GHS: Germ cell mutagenicity - Carcinogenicity - Reproductive toxicity

Non relevant.

11.1.2.3. Other health effects of the mixture.

The mixture wasn't tested as whole, read the information given for the substances used.

SECTION 12: Ecological information

12.1. Toxicity

The following points are theoretical conclusions:

12.1.1. Air:

Non relevant.

12.1.2. Water:

Unknown at that date.

12.1.2.0 Toxicity linked to fishes, Daphnia, Other aquatic invertebrates, Bacteria, Algae:

Unknown at that date.

12.1.2.1 Substance:



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Non relevant.

12.1.2.2 PNEC : Predicted No-Effect Concentration

Unknown at that date.

12.1.2.3. Substance:

Non relevant.

12.1.3. Soil :

Non relevant.

12.1.4. Flora:

Unknown at that date.

12.1.5. Fauna:

Unknown at that date.

12.1.6. Bee:

Non relevant.

12.2. Persistence and degradability

Non relevant.

12.3. Bioaccumulative potential

Non relevant.

12.4. Mobility in soil

Non relevant.

12.5. Results of PBT and vPvB assessment

Non relevant.

12.6. Other adverse effects

Unknown at that date.

The product components are not classified as environmentally hazardous.

However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment;

SECTION 13: Disposal considerations

13.0. DIRECTIVE 2008/98/EC ON INDUSTRIAL WASTE. - Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal - UNEP

13.1. WASTE TREATMENT METHODS

As this product is a mixture of minerals, all kind of methods are relevant.

Please consult local regulations and statutory European Union provisions

Unused material can be disposed according to local regulations and statutory EU provisions

Dispose of substance in suitable containers in accordance with local, regional, national or international regulation. Do not dispose in waterways.

Do not flush into drains or surface water

13.1.1. DISPOSAL OPERATIONS

D 1 Deposit into or on to land (e.g. landfill, etc.)

13.1.2. RECOVERY OPERATIONS

R 5 Recycling/reclamation of other inorganic materials.

13.1.3. PROPERTIES OF WASTE WHICH RENDER IT HAZARDOUS

Non relevant.

13.2. POTENTIAL DANGER FROM THE WASTE:

Unknown at that date.

Before destruction and disposal of the refractory lining, customers are advised to evaluate any changes to the product that may be induced by the introduction of substances, or operating conditions outside the control of the Vendor

13.3. EUROPEAN LIST OF HAZARDOUS WASTES (2000/532/EC)

As this product can be used in multiple industries, all categories are potentially valid.

10 02 : Wastes from the iron and steel industry

10 02 06 : Spent linings and refractories

10 03 : Wastes from aluminium thermal metallurgy

10 03 99 : Wastes not otherwise specified

10 04 : Wastes from lead thermal metallurgy

10 04 08 : Spent linings and refractories

10 05 : Wastes from zinc thermal metallurgy

10 05 07 : Spent linings and refractories

10 06 : Wastes from copper thermal metallurgy



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10 06 08 : Spent linings and refractories
 10 07 : Wastes from silver, gold and platinum thermal metallurgy
 10 07 06 : Spent linings and refractories
 10 08 : Wastes from other non-ferrous thermal metallurgy
 10 08 07 : Spent linings and refractories
 10 09 : Wastes from casting of ferrous pieces
 10 09 99 : Wastes not otherwise specified
 10 10 : Wastes from casting of non-ferrous pieces
 10 10 99 : Wastes not otherwise specified
 10 11 : Wastes from manufacture of glass and glass products
 10 11 08 : Spent linings and refractories
 10 12 : Wastes from manufacture of ceramic goods, bricks, tiles and construction products
 10 12 07 : Spent linings and refractories
 10 13 : Wastes from manufacture of cement, lime and plaster and articles and products made from them
 10 13 08 : Spent linings and refractories

SECTION 14: Transport information

ADR/RID/ADN class:

Non relevant to the UN classification on dangerous goods.

ICAO-TI / IATA-DGR class:

Non relevant to the UN classification on dangerous goods.

IMDG (marine) class:

Non relevant to the IMDG classification on dangerous goods.

14.1. UN number

Non relevant.

14.2. UN proper shipping name

Non relevant.

14.3. Transport hazard class(es)

Non relevant to the UN classification on dangerous goods.

14.4. Packing group:

Non relevant.

14.5. Environmental hazards:

Unknown at that date.

SECTION 15: Regulatory information

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

This product does not meet the criteria for classification for none of European or local directives, nor regulations, already known and used within the EU.

15.1.2. Regulation 1907/2006/EC on REACH regulation.

This product does not meet the criteria for classification in that regulation.

15.1.3. Regulation 1272/2008/EC on the GHS/CLP, including the EC 605/2014 (6th ATP)

This product does not meet the criteria for classification in that regulation.

15.1.4. Regulation 453/2010/EC amending Regulation (EC) No 1907/2006

This SDS has been created according to this regulation.

15.1.6. Directive 2006/8/EC on CMR and hazardous substances for environment.

This product does not meet the criteria for classification in that directive.

15.1.7. Directive 94/9/EC on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX 95)

This product does not meet the criteria for classification in that directive.

15.1.8. Directive 1999/92/EC on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres (ATEX 137)

This product does not meet the criteria for classification in that directive.

15.1.9. Decision No 2455/2001/EC on the list of priority substances in the field of water policy.

This product does not meet the criteria for classification in that directive.

15.1.10. MONTREAL Protocol on Substances That Deplete the Ozone Layer (7th revision)

This product does not meet the criteria for classification in that protocol: Mixture of inert minerals.



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15.1.11. IBC: Institutional Biosafety Committee

This product does not meet the criteria for any biosafety classification.

15.1.12. MARPOL 73/78 (the International Convention for the Prevention of Pollution from Ships)

This product does not meet the criteria for classification in that directive.

15.1.13. STOCKHOLM convention on persistent organic pollutants (POPs)

This product does not meet the criteria for classification in that directive.

15.1.14. ROTTERDAM Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

This product does not meet the criteria for classification in that directive.

15.1.15. Directive 96/29 EURATOM :

This product does not meet the criteria for classification in that directive.

15.2. Chemical Safety Assessment

This product doesn't require a Chemical Safety Assessment.

15.3. Occupational illness

Commission Recommendation of 19 September 2003 concerning the European schedule of occupational diseases (Text with EEA relevance) (notified under document number C(2003) 3297)

15.3.1. Diseases caused by the following chemical agents:

Non relevant.

- - - .201. Skin diseases and skin cancers caused by:

Non relevant.

- - - .301. Diseases caused by the inhalation of substances and agents not included under other headings

- - - .301. Diseases of the respiratory system and cancers

301.31 Pneumoconioses caused by dusts of silicates

15.5. Other national relevant Safety, health and environmental regulations/legislation specific for the substance or mixture:

15.5.- (a) TA Air/TA Luft (German Technical Instructions on Air Quality Control)

This product does not meet the criteria for classification in that directive.

15.5.- (b) WgK: German Water hazard class (from the Administrative Regulation on substances hazardous to water - assessment):

The product, (according to German regulation) is classified as (in the sense of 17.05.1999):

WGK 1: slightly hazardous to water (self-classification)

15.5.- (c) Technical rules for dangerous substances (Technische Regeln für Gefahrstoffe)

Non relevant.

15.5.- (d) Nomenclature of classified installations for environmental protection.

Non relevant.

15.5.- (e) list of carcinogens, mutagens and reproductive toxins SZW (Dutch Regulation)

Non relevant.

15.5.- (f) The General Water Assessment methodology (ABM) - Dutch Regulation

Non relevant.

15.5.- (g) The Dutch Emissions Directive (NeR) - Dutch Regulation

Non relevant.

15.5.- (h) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal - UNEP

This Convention is applied in the points 13.1.1, 13.1.2. and 13.1.3.

SECTION 16: Other information

16.0. Additionnal safety information:

As announced in the Sub-section 2.1.3. find below the full text of the Hazard statement phrases (H - EUH) and Precautionary statement phrases (P) from GHS phrases indicated.

This product contains less than 1% of: Alpha-quartz (CSFF: Crystalline Silica Fine Fraction) - CAS Nr. 14808-60-7

16.1. GHS Pictograms

Non relevant.

16.1.1. Symbol(s) in black/white or colour according to the Regulation:

(EC) No 1272/2008 [CLP/GHS]

This product does not meet the criteria for classification in any hazard class.



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16.1.2. Labelling according to the Regulation:

(EC) No 1272/2008 [CLP/GHS]

This product does not meet the criteria for classification in any hazard class.

16.1.3. Classification according to Regulation:

(EC) No 1272/2008 [CLP/GHS]

This product does not meet the criteria for classification in any hazard class.

16.1.4. Signal word:

Non relevant.

16.1.5. GHS Hazard statement phrases (H) (linked to the product)

Non relevant.

16.1.6. GHS Hazard statement phrases (H, EUH), linked to the product's retained substances, even if not relevant for the final classification:

Non relevant.

16.2. GHS Precautionary statement phrases (P)

Even if this product is not classified, please find below the -P- phrases linked to the substances used.

P260: Do not breathe dust.

P501: Dispose of contents/containers in accordance with local regulation

16.3. Hazardous substances present, below GHS classification limits:

Alpha-quartz (CSFF: Crystalline Silica Fine Fraction) - (CAS Nr. 14808-60-7)

16.4. GHS/CLP Hazard statement phrases (H - EUH): (linked to the substances cited in the point 16.3)

H372: Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.

16.5. Training:

Workers must be informed of the presence of crystalline silica and trained in the proper use and handling of this product as required under applicable regulations.

16.6. Other informations :

This safety data sheet (SDS) has been compiled according to Directive 453/2010/CE

The limits shown are from annex VI of the GHS as of 07/10/2012

16.7. Local contact for your country:

Australia: Jim Matthews - 2 Charcoal Close Unanderra NSW 2526 Australia - Phone: (02) 4271

0800 or 0434 745 006 - Fax: (02) 4272 2543 - jim.matthews@calderys.com

South-Africa: Robert Snelling - 6 Kariba Street, Vereeniging - Phone: +27(0)164406400 - Mail:

robert.snelling@calderys.com

U.K: J-P.Targe - Tel +33 (0)4.74.99.99.64 - Fax+33 (0)4.74.99.99.56 : CALDERYS France -

Research Centre - 17, rue de Copenhague - F-38070 Saint Quentin Fallavier

USA: Mr. Fielding Clover - Calderys USA, Inc. - 917 Francis Street West - Jacksonville, Alabama

36265 - P.O. Box 909 - Emergency Telephone Number: 256-435-9342

SDS status :

Modifier

JP Targe

Modification Date : 09/06/2017

Modification:

New

As the Directive 1999/45 / EC [DPD] is obsolete now, this Safety Data Sheet does not contain anymore information related to the old system. All data information are now related only to Regulation (EC) No. 1272/2008 [CLP / GHS], Regulation (EU) No 453/2010 and to the Commission Regulation (EU) 2015/830 (28th of May 2015) on compilation of e-SDS. Therefore, all sections and sub-sections have been modified.

Acronyms and abbreviations used:

AAA = DNEL Long Term exposure - Chronic effect - Local

ADR: European regulation on transport of dangerous goods by road.

AOEL: Acceptable Operator Exposure Level

AOX: Adsorbable Organic Halogen

BBB = DNEL Long Term exposure - Acute effect - Local

BCF: Bioconcentration factor

BOD: Biochemical Oxygen Demand (BOD)

CAS: Chemical Abstracts Service

CCC = DNEL Short Term exposure - Chronic effect - Local

CLP : Classification, Labelling and Packaging of chemicals

CMR : Carcinogenic, Mutagenic or Toxic for Reproduction

COD: Chemical Oxygen Demand.



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CSA : Chemical Safety Assessment
 CSR : Chemical Safety Report
 DDD = DNEL Short Term exposure - Acute effect - Local
 DNEL : Derived No-Effect Level
 EC: Ecotoxicity
 EC50: Half maximal effective concentration
 ECHA : European Chemical Agency
 EINECS: European Inventory of Existing Commercial Chemical Substance.
 ES : Exposure Scenario
 eSDS : extended Safety Data Sheet
 GefStoffV: German regulation on hazardous substances.
 GHS : Global Harmonized System of classification and labelling of chemicals
 GHS/CLP: Globally Harmonized System of Classification, Labelling and Packaging of chemicals
 IATA: International Air Transport Association.
 IATA-DGR: Dangerous Goods Regulation by the International Air Transport Association
 ICAO: International Civil Aviation Organization.
 ICAO-TI: Technical Instruction by the International Air Transport Association
 IMDG: International Maritime code for Dangerous Goods.
 JAP-ISHA-C.O.Nr. = Japanese Industrial Safety and Health Act - Cabinet Order Nr.
 JAP-PDSA-C.O.Nr. = Japanese Poisonous and Deleterious Substances Control Act - Cabinet Order Nr.
 JAP-PRTR-C.O.Nr. = Japanese Pollutant Release and Transfer Register - Cabinet Order Nr.
 LC50: Lethal Concentration, 50%.
 LD50: Lethal Dose, 50%.
 LOAEL: Lowest observed adverse effect level
 MFSU: Manufacture, Formulation, Supply and Use
 NEC: No effect concentration
 NOEC: No Observed Effect Concentration
 N.O.S. : Not Otherwise Specified
 NLP : No-Longer Polymers
 OECD: Organisation for Economic Co-operation and Development
 PAH: Polycyclic Aromatic Hydrocarbon.
 PBT : Persistent, Bioaccumulative and Toxic
 PEC : Predicted Environmental Concentration
 PNEC : Predicted No-Effect Concentration
 PNEC Co = PNEC Coral
 PNEC FW = PNEC Freshwater
 PNEC Sd = PNEC Sediment
 PNEC So = PNEC Soil
 PNEC SW = PNEC Seawater
 PNEC WIR = PNEC Water intermittent release
 POP: Persistent Organic Pollutant
 CSFF: Crystalline Silica Fine Fraction (according to the standard EN 481)
 REACH : Registration, Evaluation, Authorisation and Restriction of Chemical substances
 RID: International regulation on transport of dangerous goods by railway.
 RIP : REACH Implementation Project
 RMM : Risk Management Measure
 ROEX = Route of Exposure
 SVHC : Substance of Very High Concern
 TDOAI EC50 = Toxicity to daphnia and other aquatic invertebrates (EC50)
 TDOAI NOEC = Toxicity to daphnia and other aquatic invertebrates NOEC
 TGD : Technical Guidance Document
 ThOD: Theoretical Oxygen Demand
 TOF LC50 = Toxicity on fish LC50
 TOF NOEC = Toxicity on fish NOEC
 TTA EC10 = Toxicity to algae EC10
 TTA EC50 = Toxicity to algae EC50
 TTA NOEC = Toxicity to algae NOEC
 TTB EC0 = Toxicity to Bacteria (EC0)
 TTB NOEC = Toxicity to Bacteria NOEC



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UVCB : Substances of Unknown Variable composition, complex reaction products or Biological materials

vPvB: very Persistent very Bioaccumulative

17. Annexes:

Attached annex : Medical toxicology units

Attached annex: HS Devices - Personal protection



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Annex: MEDICAL TOXICOLOGY UNITS

Australia:

1- South Australian Poisons Information Centre Women's and Children's Hospital,
72 King William Road North Adelaide SA 5006 - Tel: +61 82 04 72 22 - Fax: +61 82 04 60 49
2 - Canberra A.C.T. Poisons Information Service, Woden Valley Hospital, Garran, Yamba Drive -
Tel: +61 62443333 / +61 62852852 - Fax: +61 6244 3334

Belgique:

Brussels / Bruxelles : Centre Anti-Poisons/Antigifcentrum, Hôpital Militaire Reine Astrid, Rue Bruyn,
Brussels B -1120 - Emergency telephone: +32 70 245 245 - Fax: +32 2 264 9646

Brazil:

Centro de Informacao Toxicologica, Rua Domingos Cresencio, 132/8 andar CEP 90650-090
Porto Alegre-RS - Tel: +55 51-223-6110 - Fax: +55 51 2299067

Bulgaria - България

Национална Токсикологична информационен център, Институт за спешна медицинска
"Пирогов", 21 Tottleben Boulevard, 1606 София - Телефон за спешни случаи: +359 2 9154 409

Croatia - Hrvatska

Otrovi Kontrolni centar, Institut za medicinska istraživanja i medicinu rada, Ksaverska cesta 2,
PP Box 291, HR-10000 Zagreb - Hitna Telefon: +385 1 234 8342

Czech Republic - česká republika

Toxikologické informační středisko, Klinika pro pracovní lékařství, 1. lékařská fakulta Univerzity Karlovy
Na Bojišti 1, 128 00 Praha 2 - Nouzové telefonní číslo: +42 2 2491 9293
nebo +42 2 2491 5402 - Fax: +42 2 2491 4570

Denmark:

Giftinformationscentralen - Bispebjerg Hospital, Bispebjerg Bakke 23, 60, 1, DK-2400 København NV -
Nødtelefon, offentlige: +45 82 12 12 12

España:

Servicio Nacional de Toxicología, c/Luis Cabrera, 9 – 28002 Madrid, Tel: +34 915 62 04 20
Unitat de Toxicologia Clínica, Servicio de Urgencias, Hospital Clinic I Provincial de Barcelona,
C/Villarroel, 170 , E-08036 Barcelona - Telèfon d'urgències: +34 93 227 98 33 or +34 93 227 54 00

Finland - SUOMI

Myrkytystietokeskuksen P.O.B 790 (Tukholmankatu 17), SF - 00029 HUS, Helsinki -
Puhelin: +358 9 471 977, Fax: +358 9 4717 47 02

France:

système ORFILA, tél: 33 (0)1.45.42.59.59 (24h/24h)

Germany - DEUTSCHLAND

Giftnotruf Berlin, Berliner Betrieb für Zentrale Gesundheitliche Aufgaben, Institut für Toxikologie,
Oranienburger Straße 285, 13437 Berlin - Notrufnummer: +49 30 19240

Greece - ΕΛΛΑΔΑ, Αθήνα Αθηνών:

Νοσοκομείο Παίδων "Αγλαΐα Κυριακού" - 11527 Αθήνα - Τηλ: +30 1 779 3777 - Fax: +30 1748 6114



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Hungary - Magyarország

Egészségügyi Toxikológiai Tájékoztató Szolgálat - 1097 Budapest, Nagyvárad tér 2.
Telefon: +36 80 20 11 99, Fax: +36 1 476 1138

India:

Poison Information Centre National Institute of Occupational Health Meghani Nagar, Ahmedabad -
India 320016 - Tel: +91-272-867351 - Fax: +91-272-866630

Italia:

Roma : Centro Antiveneni, Dipartimento di Tossicologia Clinica, Università Cattolica del Sacro Cuore,
Largo Agostino Gemelli 8, I-00168 Roma - Telefono di emergenza: +39 06 305 4343

Nederland:

Rijkinstituut voor Volksgezondheid, Antonie van Leeuwenhoeklaan 9, 3720BA Bilthoven
Tel: +31 302 541 5 11 – Fax: +31 302 748 888

Norway - NORGE

Gift Informasjon, Direktoratet for Sosial-og helsedirektoratet, P.O. Box 7000, St. Olavs Plass,
0130 Oslo - Emergency telefon: +47 22 591300

Osterreich: Vergiftungsinformationszentrale

Stubenring 6, 1010 Wien - Notruf: +43 1 406 43 43 - Informationen & Anfragen: + 43 1 406 68 98 11

Poland - Polska:

Warszawa, Poison Control Warszawie i Centrum Informacji, Szpital Praski, Al. Solidarności 67, P-03 401
Warszawa
Telefon alarmowy: +48 22 619 66 54, +48 22 619 08 97

Romania:

S.O.S Vitan Birzesti 9, Sector 4, 75889 București - Tel: +401 6 34 38 90 135 – Fax: +401 3 21 02 60
Departamentul de Toxicologie Clinică, Spitalul de Urgenta Floreasca, Calea Floreasca, București
De telefon de urgență: +40 21 230 8000

RSA - South-Africa

Poison Information Centre, University of Cape Town, Department of Paediatrics and Child Health,
Red Cross War Memorial Children's Hospital, Klipfontein Road, Rondebosch, Cape 7700,
South Africa - Tel: +27 21 658 5308 - Fax: +27 21 689 1287

Russia - Российская Федерация:

МЧС России - Центральный офис: 109012 Г.МОСКВА, ТЕАТРАЛЬНЫЙ ПР.,3 -
Телефон: (495) 449-99-99 или 122 (мобильный телефон) - Сайт: <http://www.mchs.gov.ru>
Исследования и прикладной токсикологии Центра (RATC) Федерального медико-
биологического агентства, 3 Большая Сухареvская площадь, Блок 7, Москва 129090 -
Телефон экстренной связи: +7 495 628 16 87 (только на русском)

Slovenská republika:

Národné toxikologické informačné centrum SR :
24 – hodinová konzultačná služba pri akútnych intoxikáciách: +421 2 5477 4166
Univerzitná Nemocnica Bratislava, Limbová 5, 833 05 Bratislava - e-mail: ntic@ntic.sk
Tel: +421 2 5465 2307, Fax.: +421 2 5477 4605, Mobil: +421 911 166 066,

Sweden - SVERIGE



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Svenska Giftinformationscentralen, Karolinska sjukhuset, SE-171 76 Stockholm - Telefonnummer för nödsituationer: +46 8 33 12 31 (International) 112 (Nationella)

Turkey - Türkiye

Toksikoloji Anabilim Dalı ve Zehir Merkezi, Refik Saydam Hıfzıssıhha Merkez Araştırma Enstitüsü
Cemal Gürsel Cad yok. 18, Sıhhiye, Ankara 06100 - Acil telefon numarası: 0 800 314 7900
(Türkiye), veya +90 0312 433 70 01 - Faks: +90 0312 433 70 00

United Kingdom:

The UK National Poisons Emergency number is 0870 600 6266



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ROUTE OF EXPOSURE			
EYES	SKIN	HANDS	INHALATION
DEDICATED USAGE: Non labelled, cast, hydraulic bonded products, cold conditions.			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask FFP3
DEDICATED USAGE: Non labelled, cast, hydraulic bonded products, hot conditions.			
Glasses with lateral protection 166 rev, S4KN2	Clothes ISO6942	Gloves 407 - 2122	Mask FFP3
DEDICATED USAGE: Non labelled, gunned, hydraulic bonded products, cold conditions.			
Face shield 166 rev, F4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask FFP3
DEDICATED USAGE: Non labelled, gunned, hydraulic bonded products, hot conditions.			
Face shield 166 rev, F4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask FFP3
DEDICATED USAGE: Non labelled chemical bonded gunning mixes, cold installation			
Face shield 166 rev, F4KN2	Clothes ISO6942	Gloves 407 - 2122	Mask FFP3
DEDICATED USAGE: Non labelled chemical bonded gunning mixes, hot installation			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask FFP3
DEDICATED USAGE: Labelled hydraulic bonded products, cold installation			
Glasses with lateral protection 166 rev, S4KN2	Clothes ISO6942	Gloves 407 - 2122	Mask EN 141:2000
DEDICATED USAGE: Labelled hydraulic bonded products, hot installation			
Face shield 166 rev, F4KN2	Clothes ISO6529-463	Gloves 3121 - 1994	Mask Local rules
DEDICATED USAGE: Phosphate bonded products			
Face shield 166 rev, F4KN2	Clothes ISO17491-3	Gloves 3121 - 1994	Mask Local rules
DEDICATED USAGE: Sodium silicate bonded products			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask EN 141:2000
DEDICATED USAGE: Labelled dry mixes			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask FFP3
DEDICATED USAGE: Non labelled dry mixes			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask Local rules
DEDICATED USAGE: Non labelled plastics or ramming mixes			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask FFP3
DEDICATED USAGE: Resin bonded products, cold installation.			
Glasses with lateral protection 166 rev, S4KN2	Clothes ISO6942	Gloves 407 - 2122	Mask EN 141:2000
DEDICATED USAGE: Resin bonded products, hot installation			
Glasses with lateral protection 166 rev, S4KN2	Clothes 340 rev	Gloves 388 - 3111	Mask Local rules
DEDICATED USAGE: Non labelled cement, patched, sprayed or trowelled products			



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CALDERYS table for Standard Use prescriptors

	Standard Use by Refractory producer	DEFINITION	Comments and explanations	CALDERYS examples	Standard Use by Refractory user	Definition, Comments or Examples
Sector of use						
SU a	SU10	<i>Companies mixing and blending chemicals (formulators) to produce preparations (mixtures).</i>	Monolithics producers.		SU3	<i>Industrial end-users</i>
SU b	SU13	<i>Manufacture of other non-metallic mineral products, e.g. plasters, cement</i>	Monolithics producers.		SU13	<i>Use of refractory products at e.g. cement, glass or lime industry</i>
SU c					SU14	<i>Use of refractory products at e.g. metal industry</i>
SU d					SU 0-1	<i>Other activity related to manufacturing of chemical products</i>
NACE	C23.2	<i>Manufacturing of refractory products</i>	Monolithics producers.			
Chemical Product category						
PC a	PC 10	<i>Building and construction preparations not covered elsewhere</i>	Monolithics producers.		PC 10	<i>Building and construction preparations not covered elsewhere.</i>
Process categories						
PROC a	PROC 1	<i>Use in closed process, no likelihood of exposure</i>	Use of the substances in high integrity contained system where little potential exists for exposures	Plant but mainly linked to research and control labs.	PROC 1	<i>General terms of use at refractories. Producers and Users.</i>
PROC b	PROC 2	<i>Use in closed, continuous process with occasional controlled exposure (e.g. sampling)</i>	Continuous process not specifically aimed at minimizing emissions. It is not high integrity and occasional exposure will arise.	Plant but mainly linked to research and control labs.	PROC 2	<i>General terms of use at refractories. Producers and Users.</i>
PROC c	PROC 3	<i>Use in closed batch process (synthesis or formulation)</i>	Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, but where some opportunity for contact occurs.	Plant but mainly linked to research and control labs.	PROC 3	<i>General terms of use at refractories. Producers and Users.</i>



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PROC d	PROC 4	<i>Use in batch and other process (synthesis) where opportunity for exposure arises</i>	Use in batch manufacture of a chemical where significant opportunity for exposure arises, and when the nature of the design is likely to result in exposure.	Plant but mainly linked to research and control labs.	PROC 4	<i>General terms of use at refractories. Producers and Users.</i>
PROC e	PROC 5	<i>Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</i>	Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.	Mixing minerals and/or binders.	PROC 5	Mixing minerals and/or binders at users's site.
PROC g	PROC 8a	<i>Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</i>	Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.	Transport of material at refractory producer, pumping castables at customer	PROC 8a	Transport of material by pumping castables at customers' site.
PROC h	PROC 9	<i>Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</i>	Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage	Sacking castables or mortar at refractory producer		
PROC i	PROC 13	<i>Treatment of articles by dipping and pouring</i>	Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix .	E.g. Tap-Hole clays	PROC 13	E.g. Tap-Hole clays
PROC j	PROC 14	<i>Production of preparations or articles by tableting, compression, extrusion, pelletisation</i>	Extrusion!	E.g. Tap-Hole clays, plastics.		



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PROC k	PROC 19	<i>Hand-mixing with intimate contact and only PPE available.</i>	Addresses occupations where intimate and intentional contact with substances occurs without any specific exposure controls other than PPE.	Producer handling material (e.g. chemical bonded mortar), e.g. during control.	PROC 19	Customer using material (e.g. chemical bonded mortar) at site.
PROC l	PROC 21	<i>Low energy manipulation of substances in form of massive metal or bound in other materials and/or articles.</i>	Manual cutting, cold rolling or assembly / disassembly of material/article, possibly resulting in the release of fibres, rubber fumes, metal fumes or dust	SR fibres or aluminium powder handling. Demolition of precast pieces.	PROC 21	Use and demolition of refractory material at customers' sites.
PROC m	PROC 22	<i>Potentially closed processing operations with minerals/metals at elevated temperature Industrial setting.</i>	Activities at furnaces, Exposure related to dust and fumes to be expected. Emission from direct cooling may be relevant.	E.g. Heating precast pieces.	PROC 22	Firing refractory material, at customers' sites.
PROC n	PROC 23	<i>Open processing and transfer operations with minerals/metals at elevated temperature.</i>	Exposure related to dust and fumes to be expected.	E.g. Heating precast pieces.	PROC 23	Firing refractory material, at customers' sites.
PROC o	PROC 24	<i>High (mechanical) energy work-up of massive metals or substances bound in materials and/or articles.</i>	Substantial thermal or kinetic energy applied to substance by mechanical cutting or drilling. Exposure is predominantly expected to be to dust.	Plant but mainly linked to research and control labs.	PROC 24	Use and demolition of refractory material at customers' sites.
PROC p	PROC 26	<i>Handling of solid inorganic substances at ambient temperature (no corresponding TRA entry).</i>	Transfer and handling of ores, concentrates, raw metal oxides and scrap; packaging, un-packaging, mixing/blending and weighing of metal powders or other minerals;	Standard monolithics process.	PROC 26	Handling castables at customers' sites.
Environmental Release Categories						
ERC a	ERC 2	<i>Formulation of preparations (not included into matrix).</i>	Mixing and blending of substances into preparations in all types of formulating industries.	E.g. castables formulation.	ERC 1	Mixing of raw materials, castables, mortars at customers' sites.
ERC b	ERC 3	<i>Formulation of preparations</i>	Mixing or blending of substances, which will be physically or	E.g. Plastics formulation, mortars ...	ERC 2	Mixing of raw materials, castables,



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		(inclusion into/onto matrix).	chemically bound into or onto a matrix (material) such as plastics.			mortars at customers' sites.
ERC d	ERC 5	Industrial use resulting in inclusion into or onto a matrix.	Industrial use of substances as such or in preparations (non-processing aids), which will be physically or chemically bound into or onto a matrix (material) such as binding. The category covers substances in articles with a particular function and <u>also substances remaining in the article after having been used as processing aid in an earlier life cycle stage.</u>	E.g. use of reclaims such as MgO/C bricks, or Al ₂ O ₃ /C/SiC products.	ERC 5	Handling scraps at customers' sites.
ERC e					ERC 10a	Wide dispersive outdoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life.
ERC f					ERC 11a	Wide dispersive indoor use of long-life articles and materials with low release. Low release of substances included into or onto articles and materials during their service life.
Article categories for articles with no intended release						
AC a	AC 12-1	Constructional articles and building material: insulating material (without indoor flooring).			AC 12-1	
AC b	AC 12-2	Constructional articles and building			AC 12-2	For consumers



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	<i>material: wall construction material ceramic</i>				
TARIC 3801	Artificial graphite; colloidal or semi-colloidal graphite; preparations based on graphite or other carbon in the form of pastes, blocks, plates or other semi-manufactures				
TARIC 3816	Refractory cements, mortars, concretes and similar compositions, other than products of heading 3801				
TARIC 6901	Bricks, blocks, tiles and other ceramic goods of siliceous fossil meals (for example, kieselguhr, tripolite or diatomite) or of similar siliceous earths				
TARIC 6902	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods, other than those of siliceous fossil meals or similar siliceous earths				