That SDS has been created according to the Regulation (EC) No 1272/2008 [CLP/GHS], the Directive 1999/45/EC [DPD], the Regulation (EU) No 453/2010 and the 3rd draft from ECHA on compilation of e-SDS.

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

1.1. Product identifier

CALDE™ MIX M S 86 BTI

1.1.1. Dates and Modifier of the Safety Data Sheet

Creation Date	11/06/2008 (DD/MM/YY)
Modification Date:	21/03/2013
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:

CALDERYS REACH Service

1.3.2. Street adress:

4, allée de Lausanne – Bât. F

1.3.3. Country ID/Post code/Place:

F-38070 Saint Quentin Fallavier - France

1.3.4. Telephone number (and telefax):

REACH@calderys.com

1.3.5. E-mail:

REACH@calderys.com

1.3.6. National contact's name:

J-P.Targe - Tel +33 (0)4.74.99.99.40 - Fax 33 (0)4.74.99.99.66 : CALDERYS France - Research Centre - 4 allee de Lausanne - F-38070 Saint Quentin Fallavier
jean-pierre.targe@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)

1.5. Opening hours:

Non relevant

SECTION 2: Hazards identification

2.1 Classification of the substance or the mixture:

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 according to Regulation (EC) No 1272/2008 [CLP/GHS] on classification, labeling and packaging of substances and mixtures.

2.1.2. Classification according to Directive 1999/45/EC [DPD]

This product does not meet the criteria for classification in any hazard class according to Directive 1999/45/EC [DPD]

2.1.3 Additional information:

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

2.2. Label elements:

2.2.1. Labelling according to directive 1999 45 EC [DPD]:

Non relevant

2.2.1.1. Classification according to the GHS/CLP regulation:

Non relevant

2.2.1.2. Signal word:

Non relevant

2.2.2. Symbol(s) in black/white or colour according to directive 1999/45/CE [DPD]:

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

2.2.3. Indication(s) of danger (REACH):

Non relevant

2.2.4. Risk phrase(s) R (For full text of R phrases: see section 16)

Non relevant

2.2.5. Safety phrase(s) S ; (For full text of S phrases: see section 16)

Non relevant

2.2.6. Applicable label elements in accordance with sections A and B of annex V to the DPD (special provisions for certain mixtures):

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

2.3. Other hazards:

Presence of a substance classified as CMR but below the European specific limits, see the SECTION 16.

2.3.1. SVHC (Substance of Very High Concern):

Contains a substance placed in the ECHA candidate list (Annex XV) : Diboron trioxide (CAS: 1303-86-2)

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:

Dust explosion classes St 0

SECTION 3. Composition / Information on ingredients

3.2. Mixture:

3.2.1. Non hazardous components

Component	CAS N° / EC N°	Weight %

Magnesia - REACH: Substance exempted in accordance with Annex V.7	CAS : 1309-48-4 Einecs : *215-171-9*	>=50 <100

3.2.2. Hazardous components

Component	CAS N° / EC N°	Weight %
Diboron trioxide REACH: T ; Repr.Cat.2, R60-R61 --- CLP: Repr.1B; H360FD	CAS : 1303-86-2 Einecs : *215-125-8*	>=0.25 <0.5

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:

Non relevant

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 ans delayed.

Non relevant
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

Non relevant
In principle not combustible, not explosive, not flammable

5.2.1. Hazardous decomposition products

None

5.3. Advice for firefighters

5.3.1. Personal precautions:

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
Non relevant
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;
No special precautions for cleaning or removal.
6.3.2. - (e) vacuuming techniques;
Non relevant
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 spill 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
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:
Non relevant
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 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
Keep only in the original container in a cool, well-ventilated place
Avoid contact with incompatibles mentioned under item 10

7.2.4. Storage class (national):

Non relevant

7.2.5. Further information on storage conditions:

Non relevant

7.3. Specific end uses:

Non relevant

7.3.1. Recommendations:

Stacking height: up to 2 pallets maximum.

7.3.2. Industrial sector, specific solutions:

Non relevant

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Substance	CAS N° / EC N°	L.T.E - 8 hr TWA mg/m3
Magnesia - REACH: Substance exempted in accordance with Annex V.7	CAS : 1309-48-4 Einecs : *215-171-9*	4
Diboron trioxide REACH: T ; Repr.Cat.2, R60-R61 --- CLP: Repr.1B; H360FD	CAS : 1303-86-2 Einecs : *215-125-8*	2

8.2. Exposure Controls:

The chart above mentionnes the lowest exposure limit values known in the EU for each substance.
All the values indicated in the chart above are available in the GESTIS database: http://limitvalue.ifa.dguv.de/Webform_gw.aspx
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.
Contains some substances without any approved Occupational Exposure values

8.2.1. Appropriate engineering controls

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

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 according to the 89/686/EEC

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 appropriete anti-dust mask (EN149:2009 FFP3)
Use a filtering respiratory device, in case of airbone concentrations are expected to exceed exposure limits.

8.2.3. Environmental exposure controls

Non relevant

8.2.4. Exposure scenario:

Read carefully the relevant Exposure Scenario for borates placed as annex of the §17

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Name of the characteristic	Value
Appearance:	Dry mixture of aggregates and fine powders
Color:	White
Odour:	No particular odour
Melting point	> 1700 °C
Vapour density:	Non relevant
pH:	Unable to determine. Mixture of dry minerals.
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:	No

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.

10.3. Possibility of hazardous reactions
No hazards to our knowledge
10.4. Conditions to avoid
Mixture of inert minerals.
10.5. Incompatible materials
No hazards to our knowledge
Mixture of inert minerals.
10.6. Hazardous decomposition products
None

SECTION 11: Toxicological information

Data linked to the pure substance or its reglementary concentration
Substance as EU/REACH:
_ Diboron trioxide, CAS Nr.1303-86-2 - Einecs Nr.215-125-8 - Label: T, Repr.Cat.2; R60, R61 - if Cn = 3,1 %
Substance as GHS/CLP:
_ Diboron trioxide - CAS Nr.1303-86-2 - Einecs Nr.215-125-8 - Label: Repr.1B; H360F, H360D
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.

11.1.2.1. The relevant effects classes for which information shall be provided, are:
Non relevant
11.1.2.3. Other health effects of the mixture.
This product does not meet the criteria for classification in any hazard class according to Directive 1999/45/EC [DPD]
11.1.3. The substance or mixture is not classified for a particular hazard class.
This product does not meet the criteria for classification in any hazard class according to Directive 1999/45/EC [DPD]
This product does not meet the criteria for classification in any hazard class according to Regulation (EC) No 1272/2008 [CLP/GHS].

SECTION 12: Ecological information

12.0. General Information:

12.1. Toxicity

The following points are theoretical conclusions:
12.1.1. Air:
Non relevant
12.1.2. Water:
Non relevant
12.1.3. Soil :
The basic aggregate, or magnesite, in contact with moisture over a prolonged period of time forms hydrates which are slightly alkaline. These hydrates are commonly used for neutralising acid soil.
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
No
12.3. Bioaccumulative potential
No

12.4. Mobility in soil

Unknown at that date

12.5. Results of PBT and vPvB assessment

No

12.6. Other adverse effects

Unknown at that date

12.6.1. Miscellaneous:

No specific adverse effect known.

SECTION 13: Disposal considerations

13.0. DIRECTIVE 2008/98/EC ON INDUSTRIAL WASTE.

13.1. WASTE TREATMENT METHODS

As this product is a mixture of minerals, all kind of methods are relevant.
The unused product is not considered dangerous for the environment
Unused material can be disposed according to local regulations and statuary EU provisions

13.1.1. DISPOSAL OPERATIONS

D 1 Deposit into or on to land (e.g. landfill, etc.)
D 3 Deep injection (e.g. injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc.)

13.1.2. RECOVERY OPERATIONS

Non relevant

13.1.3. PROPERTIES OF WASTE WHICH RENDER IT HAZARDOUS

Non relevant

13.2. POTENTIAL DANGER FROM THE WASTE:

The unused product is not considered dangerous for the environment
The basic aggregate, magnesite will slowly change in contact with service water to form hydrates which have a higher volume than the original material. This property should be taken into account when dumping the used or unused material in landfill sites destined for construction purposes.
Before destruction and disposal of the refractory lining, customers are adviced 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 (2001/118/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
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:
Non relevant

SECTION 15: Regulatory information

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

15.1.1. Directive 67/548/EEC on dangerous substances.
This product does not meet the criteria for classification in that directive.
15.1.2. Directive 1999/45/EC on dangerous preparation.
This product does not meet the criteria for classification in that directive.
15.1.3. Regulation 1907/2006/EC on REACH regulation.
This product does not meet the criteria for classification in this regulation.
15.1.4. Regulation 1272/2008/EC on the GHS/CLP, including the EC 286/2011 (2nd ATP)
This product does not meet the criteria for classification in this regulation.
15.1.5. 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.
Presence of a substance classified as CMR but below the European specific limits.
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.
15.1.11. IBC: Institutional Biosafety Committee
This product does not meet the criteria for any biosafety classification: Mixture of inert minerals.
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)
Non relevant
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.
Contains: Diboron trioxide; CAS Nr. 1303-86-2 - Reproduction Toxic Substances 5.2.7.1.3

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):
Non hazardous substance for water

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

Unknown at that date

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

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

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

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

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

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

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

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

SECTION 16: Other information

16.0. Additionnal safety information:

As announced in the Section.3 and the Section 11, some hazardous substances are present in this product.Therefore, because their maximum amount are lower than their specific limits indicated in the different UE directives, the product does not need any specific label nor risk or safety sentences. Find below the substances and the risk and safety phrases linked to these substances.

16.1 GHS/CLP Pictograms

16.1.1. Symbol(s) in black/white or colour according to the Regulation (EC) No 1272/2008 [CLP/GHS]:

Non relevant

16.1.2. Labelling according to the Regulation (EC) No 1272/2008 [CLP/GHS]:

Non relevant

16.1.3. Classification according to the GHS/CLP regulation:

Non relevant

16.1.4. Signal word:

Non relevant

16.1.5. GHS/CLP Hazard statement phrases (H - EUH):

Non relevant

16.2. Hazardous substances present, below EU classification limits:

16.2.1. Substance as EU/REACH:

_ Diboron trioxide, CAS Nr.1303-86-2 - Einecs Nr.215-125-8 - Label: T, Repr.Cat.2; R60, R61 - if Cn = 3,1 %

16.2.2. Substance as GHS/CLP:

_ Diboron trioxide - CAS Nr.1303-86-2 - Einecs Nr.215-125-8 - Label: Repr.1B; H360F, H360D

16.3. EU/REACH Risk phrases

R60: May impair fertility.
R61: May cause harm to the unborn child.

16.8. Other informations :

This safety data sheet (SDS) has been compiled according to Directive 453/2010/CE
This safety data sheet (SDS) has been compiled according to Directive 1999-45-CE
This safety data sheet (SDS) has been compiled according to annexe II of the CE 1907/2007 (18th of december 2006) regulations concerning the adoption of REACH
The limits shown are from annex I of the European Directive 67/548 EEC modified on 17th of March 2007.
The limits shown are from annex VI of the GHS as of 07/10/2012

SDS status :

Modifier JP Targe Modification Date : 21/03/2013

Modification:

New
As this SDS was created according to the last EU recommendation; (EU) No 453/2010 of 20th of May 2010, all sections and sub-sections have been modified.

Acronyms and abbreviations used:

ADR: European regulation on transport of dangerous goods by road.
AOX: Adsorbable Organic Halogen
BCF: Bioconcentration factor
BOD: Biochemical Oxygen Demand (BOD)
CAS: Chemical Abstracts Service
CLP : Classification, Labelling and Packaging of chemicals
CMR : Carcinogenic, Mutagenic or Toxic for Reproduction
CSA : Chemical Safety Assessment
CSR : Chemical Safety Report
COD: Chemical Oxygen Demand.
DNEL : Derived No-Effect Level
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.
LC50: Lethal Contration, 50%.
LD50: Lethal Dose, 50%.
MFSU: Manufacture, Formulation, Supply and Use
NLP : No-Longer Polymers
N.O.S. : Not Otherwise Specified
PBT : Persistent, Bioaccumulative and Toxic
PEC : Predicted Environmental Concentration
PNEC : Predicted No-Effect Concentration
POP : Persitent Organic Pollutant
RCS: respirable crystalline silica
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
SVHC : Substance of Very High Concern
TGD : Technical Guidance Document
ThOD: Theoretical Oxygen Demand
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
Attached annex : Borates scenario exposure

Annex: MEDICAL TOXICOLOGY UNITS

Greece - ΕΛΛΆΔΑ, Αθήνα Αθηνών: Νοσοκομείο Παίδων "Αγλαΐα Κυριακού" - 11527 Αθήνα - Τηλ: +30 1 779 3777 - Fax: +30 1748 6114
United Kingdom: The UK National Poisons Emergency number is 0870 600 6266 (Outside the UK: +44 870 600 6266)
France: système ORFILA, tél: 33 (0)1.45.42.59.59 (24h/24h)
Italia: Roma : Centro Antiveleni, Dipartimento di Tossicologia Clinica, Universita 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
España: Servicio Nacional de Toxicologia, c/Luis Cabrera, 9 – 28002 Madrid, Tel: +34 915 62 04 20 Unitat de Toxicologia Clinica, 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 bleep 190 - Fax: +34 93 227 56 93
Hungary - Magyarország Egészségügyi Toxikológiai Tájékoztató Szolgálat - 1097 Budapest, Nagyvárad tér 2. - Telefon: +36 80 20 11 99, Fax: +36 1 476 1138
Romania: S.O.S Vitan Birzesti 9, Sector 4, 75889 Bucureşti - Tel: +401 6 34 38 90 135 – Fax: +401 3 21 02 60 Departamentul de Toxicologie Clinică, Spitalul de Urgenta Floreasca, Calea Floreasca, Bucureşti - De telefon de urgenţă: +40 21 230 8000
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
Denmark: Giftinformationscentralen - Bispebjerg Hospital, Bispebjerg Bakke 23, 60, 1, DK-2400 København NV - Nødtelefon, offentlige: +45 82 12 12 12
Osterreich: Vergiftungsinformationszentrale, Allgemeines KrankenhausWaehringer Geurtel 18-20, Wien 1090 - Telephone: +43 1 40 400 2222
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
India: Poison Information Centre National Institute of Occupational Health Meghani Nagar, Ahmedabad - India 320016 - Tel: +91-272-867351 - Fax: +91-272-866630
RSA : Poison Information Centre, University of Cape Town, Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital, Klipfontein Road, Rondesbosch, Cape 7700, South Africa - Tel: +27 21 658 5308 - Fax: +27 21 689 1287
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
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
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 Сухаревская площадь, Блок 7, Москва 129090 - Телефон экстренной связи: +7 495 628 16 87 (только на русском)
Finland - SUOMI
Myrkytystietokeskuksen P.O.B 790 (Tukholmankatu 17), SF - 00029 HUS, Helsinki - Puhelin: +358 9 471 977, Fax: +358 9 4717 47 02
Norway - NORGE
Gift Informasjon, Direktoratet for Sosial-og helsedirektoratet, P.O. Box 7000, St. Olavs Plass, 0130 Oslo - Emergency telefon: +47 22 591300
Sweden - SVERIGE
Svenska Giftinformationscentralen, Karolinska sjukhuset, SE-171 76 Stockholm - Telefonnummer för nödsituationer: +46 8 33 12 31 (International) 112 (Nationella)
Germany - DEUTSCHLAND
Giftnotruf Berlin, Berliner Betrieb für Zentrale Gesundheitliche Aufgaben, Institut für Toxikologie, Oranienburger Straße 285, 13437 Berlin - Notrufnummer: +49 30 19240
Bulgaria - България
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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
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

ROUTE OF EXPOSURE			
EYES	**SKIN**	**HANDS**	**INHALATION**
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	FFP3
DEDICATED USAGE: Non labelled, cast, hydraulic bonded products, cold conditions.			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	ISO6942	407 - 2122	FFP3
DEDICATED USAGE: Non labelled, cast, hydraulic bonded products, hot conditions.			
Face shield	Clothes	Gloves	Mask
166 rev, **F**4KN2	340 rev	388 - 3111	FFP3
DEDICATED USAGE: Non labelled, gunned, hydraulic bonded products, cold conditions.			
Face shield	Clothes	Gloves	Mask
166 rev, **F**4KN2	ISO6942	407 - 2122	FFP3
DEDICATED USAGE: Non labelled, gunned, hydraulic bonded products, hot conditions.			
Face shield	Clothes	Gloves	Mask
166 rev, **F**4KN2	340 rev	388 - 3111	FFP3
DEDICATED USAGE: Non labelled chemical bonded gunning mixes, cold installation			
Face shield	Clothes	Gloves	Mask
166 rev, **F**4KN2	ISO6942	407 - 2122	FFP3
DEDICATED USAGE: Non labelled chemical bonded gunning mixes, hot installation			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	FFP3
DEDICATED USAGE: Labelled hydraulic bonded products, cold installation			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	ISO6942	407 - 2122	EN 141:2000
DEDICATED USAGE: Labelled hydraulic bonded products, hot installation			
Face shield	Clothes	Gloves	Mask
166 rev, **F**4KN2	ISO6529-463	3121 - 1994	Local rules
DEDICATED USAGE: Phosphate bonded products			
Face shield	Clothes	Gloves	Mask
166 rev, **F**4KN2	ISO17491-3	3121 - 1994	Local rules
DEDICATED USAGE: Sodium silicate bonded products			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	EN 141:2000
DEDICATED USAGE: Labelled dry mixes			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	FFP3
DEDICATED USAGE: Non labelled dry mixes			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	Local rules
DEDICATED USAGE: Non labelled plastics or ramming mixes			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	FFP3
DEDICATED USAGE: Resin bonded products, cold installation.			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	ISO6942	407 - 2122	EN 141:2000
DEDICATED USAGE: Resin bonded products, hot installation			
Glasses with lateral protection	Clothes	Gloves	Mask
166 rev, **S**4KN2	340 rev	388 - 3111	Local rules
DEDICATED USAGE: Non labelled cement, patched, sprayed or trowelled products			

REACH Borates Consortium		
Industrial use of refractory products		
Sector of use	SU3	Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	PROC19 PROC7	Hand-mixing with intimate contact and only PPE available Industrial spraying
Chemical product category	PC0	Refractory linings
Contributing scenario 1: preparing and applying refractory mixes		
Product characteristics		
There are a variety of refractory products containing borates. Products may be supplied in dry or as moist products with liquid binders present containing between 0.7 and 5% borate. The equivalent boron content is between 0.08 and 1.1%. The refractory mixes are supplied in bags and are mixed with aggregate and/or liquid binder, to produce a castable mixture.Hot gunning refractory mixes are usually supplied in a moist state ready for use, or may be added to water and mixed using a paddle mixer.		
Amounts used:		
The amount of refractory used will depend on the work being carried out. Some mixes are used to make repairs to furnace linings, which may only require a few kgs of material. Some refractory mixes are used for hot-gunning, where the mixture is sprayed onto the refractory lining as a coating. This activity may take several days, depending on the size of the furnaceor kiln. Some refractories are cast into shapes for use e.g. crucibles. Some tasks may require several hundred kgs of of refractory material.		
Frequency and duration of use		
The frequency and duration of use of refractory materials will depend on whether workers are working intermittently on repairs and relinings of furnaces or kilns in their own workplaces, or whether the workers are specialists who carry out this type of work on a daily basis.		
Human factors not influenced by risk management		
None		
Other given operational conditions affecting workers' exposure		
The work takes place indoors. If carrying out hot gunning repairs, the temperature will be high. Workers may be working in a confined spaces inside kilns and furnaces.		
Technical conditions and measures at process level (source) to prevent release		
None		
Technical conditions and measures to control dispersion from source towards the worker		
Refractory materials are sometimes supplied in a damp, ready to use form. If spraying, the mixture is wet.		
Organisational measures to prevent/limit releases, dispersion and exposure		
Training of operatives and routine maintenance and testing of equipment.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Operatives wear overalls, gloves, safety glasses/goggles. If spraying inside a kiln/furnace, a full-face, powered respirator should be worn to give protection against airborne dust. If there is potential for oxygen deficiency, a suitable compressed airline should be used in conjunction with the full-face respirator to provide an independent supply of fresh air.Where RPE is used, the worker should be ace-fit tested to ensure that a good face seal can be obtained. The RPE above rely on a tight face seal and will not provide the required protection unless they fit the contours of the face properly and securely. The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective equipment and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective equipment programme including training of the workers.		
Information on estimated exposure		
There is no exposure data available for using refractory materials. ART has been used to model		

exposure during mixing and spraying of refractory coatings. The estimated inhalation exposure for these activities is 0.012mgB/m3. This estimation takes no account of respiratory protective equipment.This value is well below the inhalation DNEL of 1.45mgB/day.

There is no data available for dermal exposure. Dermal exposure has been modelled using MEASE. The estimated exposure for hand-mixing the refractory is 0.04mgB/day assuming that the boron content of the refractory mix is between 1 and 5%. The estimated exposure during spraying is 0.002mgB/day. The total value for these activities is 0.042mgB/day. This value is well below the dermal DNEL of 24mgB/day.

Refractory material may be applied by hand in or behind moulds. The refractory material will be wet, so the opportunity for inhalation exposure will be negligible, but there will be the potential for dermal exposure. MEASE was used to estimate dermal exposure during this activity. The estimated dermal exposure during this activity was 0.24mgB/day, taking intoaccount the use of suitable gloves. This value is well below the dermal DNEL of 24mgB/day.