# FLUE DUST
## MATERIAL SAFETY DATASHEET

## Section 1: Identification of the substance/ mixture and of the company/undertaking

### 1.1 Product Identifier
Flue dust from production of cement clinker
EINECS: 270-659-9
CAS: 68475-76-3
Synonyms: Cement kiln dust, bypass dust, clinker dust
REACH registration number: 01-2119486767-17-xxxx

### 1.2 Relevant identified uses of the substance or mixture and uses advised against
Flue dust is predominantly used for the production of common cements or other hydraulic binders in industrial installations.

### 1.3 Details of the supplier of the safety data sheet
CEMEX UK Operations Ltd
CEMEX House, Evreux Way
Rugby, Warwickshire CV21 2DT
Tel: 01788 517000 (out of hours 01932 568833)
Fax: 01788 517009
www.cemex.co.uk

### 1.4 Emergency Telephone Number
01788 517000 (Available 9am-5pm Mon-Fri)

01932 568833 (Available outside normal office hours)

Fax: 01788 517009
Email: gb-enquiries@cemex.com

## Section 2: Hazard information

### 2.1 Classification of the substance or mixture
**According to Regulation (EC) No 1272/2008**

| HAZARD CLASS | HAZARD CATEGORY | CLASSIFICATION PROCEDURE |
|---|---|---|
| Skin irritation | 2 | On the basis of test data |
| Serious eye damage/ eye irritation | 1 | On the basis of test data |
| Skin sensitisation | 1 | On the basis of literature survey |
| Specific target organ toxicity single exposure respiratory tract irritation | 2 | On the basis of literature survey |

**Hazard statements:**
H318: Causes serious eye damage
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H335: May cause respiratory irritation

**Classification according to Council Directive 67/548/EEC:**
Xi Irritant
R37/38 Irritating to respiratory system and skin
R41 Risk of serious damage to eyes
R43 May cause sensitisation by skin contact

Flue dust may cause irritation of the respiratory system. When flue dust accidentally comes into contact with water or when flue dust becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet flue dust may provoke skin and eye irritation. It may also cause an allergic reaction in some individuals due to the soluble Cr(VI) content.

### 2.2 Label elements
**According to Regulation (EC) No 1272/2008:**

**Danger:**
H318: Causes serious eye damage
H315: Causes skin irritation
H317: May cause an allergic skin reaction
H335: May cause respiratory irritation
P280: Wear protective gloves/protective clothing/eye protection/face protection
P305+P351+P338+P310: IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician

P302+P352+P333+P313: IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/ attention
P261+P304+P340+P312: Avoid breathing dust/fume/gas/mist/vapours/spray. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

### 2.1 Other hazards
Flue dust does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006).

## Section 3: Composition/information on ingredients

### 3.1. Substances
Flue dust is a complex combination of finely divided inorganic particles separated from the exit gases formed during the manufacture of Portland cement clinker. It is defined as inorganic UVCB substance (Substances of Unknown or Variable composition, Complex reaction products or Biological materials). Main constituents are Portland cement clinker phases, calcium oxide, calcium carbonate and alkali sulphates and alkali chlorides. The following constituents can be present in flue dust:

| CONSTITUENT | MINERAL NAME | EC | CAS | CONCENTRATION RANGE (% W/W) |
|---|---|---|---|---|
| Tricalcium silicate | Alite | 235-336-9 | 12168-85-3 | 0 - 55 |
| Dicalcium silicate | Belite | 233-107-8 | 10034-77-2 | 0 - 50 |
| Tricalcium aluminate | - | 234-932-6 | 12042-78-3 | 0 - 10 |
| Tetracalcium aluminoferrite | Brownmillerite | 235-094-4 | 12068-35-8 | 0 - 15 |
| Monocalcium aluminate | - | 234-931-0 | 12042-68-1 | 0 - 15 |
| Tetracalcium sulfoaluminate | Ye'elemite | NA | 12005-25-3 | 0 - 15 |
| Calcium carbonate silicate | Spurrite | NA | 11140-12-8 | 0 - 40 |
| Calcium oxide | Lime | 215-138-9 | 1305-78-8 | 0 - 65 |
| Calcium hydroxide | Portlandite | 215-137-3 | 1305-62-0 | 0 - 35 |
| Magnesium oxide | Periclase | 215-171-9 | 1309-48-4 | 0 - 20 |
| Dodekacalcium heptaaluminate | Mayenite | NA | NA | 0 - 20 |
| Monocalcium dialuminate | Grossite | NA | NA | 0 - 10 |
| Dicalcium (magnesium, aluminium) silicate | Melilite, akermanite, gehlenite | NA | NA | 0 - 10 |
| Pentacalcium tri(silicate, phosphate, sulfate) mono(fluorid, hydroxide, chloride) | Ellestadite | NA | NA | 0 - 25 |
| Undecacalcium tetrasilicon monosulphur octadecaoxide | Jasmundite | NA | NA | 0 - 10 |
| Calcium carbonate | Calcite | 207-439-9 | 471-34-1 | 0 - 95 |
| Silicon dioxide | Quartz | 238-878-4 | 14808-60-7 | 0 - 20 |
| Calcium magnesium dicarbonate | Dolomite | 240-440-2 | 16389-88-1 | 0 - 20 |
| Silicate minerals | Silicate minerals | NA | NA | 0 - 40 |
| Dicalcium aluminium hexahydroxy chloride trihydrate | Hydrocalumite | NA | NA | 0 - 15 |
| Potassium chloride | Sylvite | 231-211-8 | 7447-40-7 | 0 - 65 |
| Sodium chloride | Halite | 231-598-3 | 7647-14-5 | 0 - 10 |
| Calcium sulfate | Anhydrite, gypsum | 231-900-3 | 7778-18-9 | 0 - 40 |
| Potassium sulfate | Arcanite | 231-915-5 | 7778-80-5 | 0 - 60 |
| Potassium sodium sulfate | Aphtitalite | 240-411-4 | 16349-83-0 | 0 - 30 |
| Potassium calcium sulfate | Syngenite, Ca-Langbeinite | NA | 13780-13-7 | 0 - 25 |
| Rest fraction not specified/Unknown | - | - | - | 0 - 10 |

## Section 4: First Aid Measures

### 4.1. Description of first aid measures

**General Notes:** No personal protective equipment is needed for first aid responders. First aid workers should avoid contact with wet flue dust or flue dust containing preparations.

**Following contact with eyes:** Do not rub eyes in order to avoid possible corneal damage by mechanical stress. Remove contact lenses if any. Incline head to injured eye, open the eyelids widely and flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes to remove all particles. Avoid flushing particles into uninjured eye. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist.

**Following skin contact:** For dry flue dust, remove and rinse abundantly with water. For wet/damp flue dust, wash skin with plenty of water. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns.

**Following inhalation:** Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops or if discomfort, coughing or other symptoms persist.

**Following ingestion:** Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact the anti poison centre.

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

**Eyes:** Eye contact with flue dust (dry or wet) may cause serious and potentially irreversible injuries.

**Skin:** Flue dust may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause contact dermatitis after repeated contact. Prolonged contact between flue dust, containing Portland cement clinker phases and moist skin may cause irritation, dermatitis or burns. For more details see Reference (1).

**Inhalation:** Repeated inhalation of flue dust over a long period of time increases the risk of developing lung diseases.

**Environment:** Under normal use, flue dust is not hazardous to the environment.

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

When contacting a physician, take this Safety Data Sheet with you.

## Section 5: Fire-fighting measures

### 5.1. Extinguishing media

Flue dust is not flammable.

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

Flue dusts are non-combustible and non-explosive and will not facilitate or sustain the combustion of other materials.

### 5.3. Advice for fire-fighters

Flue dust poses no fire-related hazards. No need for special protective equipment for fire fighters.

## SECTION 6: Accidental release measures

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

**For non-emergency personnel:** Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.

**For emergency responders:** Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels.

### 6.2. Environmental precautions

Do not wash flue dust down sewage and drainage systems or into bodies of water (e.g. streams).

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

Collect spilled material and use it.

Use dry cleanup methods such as vacuum clean-up or vacuum extraction (Industrial portable units equipped with high efficiency air filters (EPA and HEPA filters, EN 1822-1:2009) or equivalent technique) which do not cause airborne dispersion. Never use compressed air.

Ensure that the workers wear appropriate personal protective equipment and prevent dust from spreading.

Avoid inhalation of flue dust and contact with skin. Place spilled material in a container for future use.

### 6.4. Reference to other sections

See sections 8 and 13 for more details.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

**7.1.1 Protective measures:**

Follow the recommendations as given under Section 8.

To clean up dry flue dust, see Subsection 6.3.

**Measures to prevent fire:**

Not applicable.

**Measures to prevent aerosol and dust generation:**

Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.

**Measure to protect the environment:**

No particular measures.

**7.1.2 Information on general occupational hygiene:**

Do not handle or store near food and beverages or smoking materials. In dusty environment, wear dust mask and protective goggles. Use protective gloves to avoid skin contact.

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

Flue dust should be stored under waterproof, dry (i.e. with internal condensation minimised) conditions, clean and protected from contamination. Engulfment hazard: Flue dust can build-up or adhere to the walls of a confined space. The flue dust can release, collapse or fall unexpectedly. To prevent engulfment or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains flue dust without taking the proper safety measures. Do not use aluminium containers due to incompatibility of the materials.

### 7.3. Specific end use(s)

No additional information for specific end uses. (see section 1.2).

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

**DNEL inhalation (8h): 1 mg/m³** (According to a ACGIH recommendation for a threshold limit value for respirable Portland cement particulate matter (reference 2) and a SCOEL recommendation for an 8-hour TLV-TWA for calcium oxide of 1 mg/m³ respirable dust (reference 3))

**DNEL dermal:** not applicable

**DNEL oral:** not relevant

The DNEL refers to respirable dust, but the tool used for the risk assessment (MEASE, reference (4)) works with the inhalable fraction. Therefore, an additional safety margin is inherently included in the outcome of the assessment and the derived risk management measures. For workers, no DNEL for dermal exposure are available, neither from human hazard studies nor from human experience. Since flue dust is classified as irritating to skin and eyes, dermal exposure has tobe minimised as far as technically feasible.

**PNEC water:** not applicable

**PNEC sediment:** not applicable

**PNEC soil:** not applicable

The risk assessment of the environmental compartments is based on the resulting pH impact on water. Possible pH changes in surface water, ground water and STP effluent should not increase the value 9.

### 8.2. Exposure controls

To control potential exposures, generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate.

**8.2.1 Appropriate engineering controls:**

Measures to reduce generation of dust and to avoid dust propagating in the environment such as dedusting, exhaust ventilation and dry clean-up methods which do not cause airborne dispersion.

**8.2.2 Individual protection measures such as personal protection equipment**

General: Do not eat, drink or smoke when working with flue dust to avoid contact with skin or mouth. Before starting to work with flue dust, apply a barrier creme and reapply it at regular intervals. Immediately after working with flue dust or flue dust-containing materials, workers should wash or shower or use skin moisturisers. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

**Eye /face protection:** Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. It is also advisable to have individual pocket eyewash.

**Skin protection:** Since calcium dihydroxide is classified as irritating to skin, dermal exposure has to be minimised as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn.

**Respiratory protection:** Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended depending on the expected exposure levels. When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. It should be adapted to the dust level and conform to the relevant EN standard.

**Thermal hazards:** Not applicable.

**8.2.2 Environmental exposure controls:**

According to available technology. See engineering control measures to avoid dust propagating in the environment. Take measures to ensure that flue dust does not reach water (sewage systems and ground or surface water).

## SECTION 9: Physical and chemical properties

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

(a) Appearance: Flue dust is a powdery inorganic material. The colour can vary between beige and grey, depending on the composition (UVC substance)

(b) Odour: Odourless.

(c) Odour threshold: no odour threshold, odourless.

(d) pH: (T = 20°C in water, water-solid ratio 1:2): about 9 - 13, strongly depending on the composition of the UVCB substance flue dust.

(e) Melting point: > 850 °C

(f) Initial boiling point and boiling range: Not applicable as under normal atmospheric conditions, melting point > 850°C

(g) Flash point: Not applicable as is not a liquid.

(h) Evaporation rate: Not applicable as is not a liquid.

(i) Flammability (solid, gas): Not applicable as is a solid which is non combustible and does not cause or contribute to fire through friction.

(j) Upper/lower flammability or explosive limits: Not applicable as is not a flammable gas.

(k) Vapour pressure: Not applicable as melting point > 850 °C

(l) Vapour density: Not applicable as melting point > 850 °C

(m) Relative density: 2.7 - 3.2; Apparent density -: 0.9 - 1.5 g/cm³

(n) Solubility(ies) in water (T = 20 °C): about 0.1-100 g/l, strongly depending on the composition of the UVCB substance flue dust.

(o) Partition coefficient: n-octanol/water: Not applicable as is inorganic substance.

(p) Auto-ignition temperature: Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition)

(q) Decomposition temperature: Not applicable as no organic peroxide are present.

(r) Viscosity: Not applicable as it is not a liquid.

(s) Explosive properties: Not applicable. Not explosive or pyrotechnic. Not in itself capable of producing gas by chemical reaction at temperature and pressure and at a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction.

(t) Oxidising properties: Not applicable as does not cause or contribute to the combustion of other materials.

### 9.2. Other Information

Not applicable.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

When mixed with water, flue dust will harden into a stable mass that is not reactive in normal environments.

### 10.2. Chemical stability

Flue dust is stable as long as it is properly stored (see Section 7). It should be kept dry. Contact with incompatible materials should be avoided.

Wet flue dust is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble metals. Flue dust dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Flue dust reacts with water to form silicates and calcium hydroxide. Silicates in flue dust react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, managanese trifluoride, and oxygen difluoride.

### 10.3. Possibility of hazardous reactions

Not applicable.

### 10.4. Conditions to avoid

Humid conditions during storage may cause lump formation and loss of product quality

### 10.5. Incompatible materials

Acids, ammonium salts, aluminium or other non-noble metals.

### 10.6. Hazardous decomposition products

Flue dust will not decompose into any hazardous products.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

| HAZARD CLASS | CAT | EFFECT | REFERENCE |
|---|---|---|---|
| Acute toxicity - dermal | - | Limit test acc. OECD TG 402, rat, 24 hours contact, 2,000 mg/kg body weight. Based on available data, the classification criteria are not met. | (5) |
| Acute toxicity - inhalation | 1 | Limit test acc. OECD TG 436, rat, 4 hours exposure, 6 g/m³. Based on available data, the classification criteria are not met. | (6) |
| Acute toxicity - oral | - | Dose range finding study acc. OECD TG 422, rat, 1848 mg/kg bw/d over a period of 7 days. Based on available data, the classification criteria are not met. | (7) |
| Skin corrosion/irritation | - | In vitro studies on skin irritation and corrosion acc. EpiDerm TM. Portland cement clinker - one of the main constituents of flue dust - in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns. Based on the available data flue dust is classified as irritant to skin. | (8), (9) |
| Serious eye damage/irritation | - | In vitro study on eye irritation acc. OECD TG 438. Flue dust caused a mixed picture of corneal effects and the calculated irritation index was about 140. Direct contact with Portland cement clinker - one of the main constituents of flue dust - may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact with larger amounts of dry Portland cement clinker dust or splashes of wet clinker may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness. | 10), human experience |
| Skin sensitisation | - | Some individuals may develop eczema upon exposure to wet cement clinker dust, which is a main constituent of flue dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. | (11), (12) |
| Respiratory sensitisation | - | There is no indication of sensitisation of the respiratory system. Based on available data, the classification criteria are not met | (1) |
| Germ cell mutagenicity | - | No indication. Based on available data, the classification criteria are not met | (13), (14) |
| Carcinogenicity | - | No causal association has been established between flue dust exposure and cancer. The epidemiological literature does not support the designation of Portland cement as a suspected human carcinogen. Flue dust is mainly used in cements. Portland cement is not classifiable as a human carcinogen (According to ACGIH A4: Agents that cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity that are sufficient to classify the agent with one of the other notations.). Portland cement contains up to 5 % flue dust. Based on available data, the classification criteria are not met. | (1), (15) |
| Reproductive toxicity; | - | Repeated dose toxicity study acc. OECD TG 422, rat, up to 16,000 mg/kg diet over a period of 28 days for males and 6-7 weeks for females. Based on available data, the classification criteria are not met. | (7) |
| STOT-single exposure | 3 | Portland Cement clinker dust - a main constituent of flue dust - may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits. Overall, the pattern of evidence clearly indicates that occupational exposure to cement dust has produced deficits in respiratory function. However, evidence available at the present time is insufficient to establish with any confidence the dose-response relationship for these effects. | (1) |
| STOT-repeated exposure | - | There is an indication of COPD. The effects are acute and due to high exposures. No chronic effects or effects at low concentration have been observed. Based on available data, the classification criteria are not met. | (16) |
| Aspiration hazard | - | Not applicable as flue dust is not used as an aerosol. | |

**Medical conditions aggravated by exposure:**

Flue dust may aggravate existing respiratory system disease(s) and/or medical conditions such as emphysema or asthma and/or existing skin and/or eye conditions.

## SECTION 12: Ecological information

### 12.1. Toxicity

| HAZARD CLASS | EFFECT | REFERENCE |
|---|---|---|
| Acute toxicity to fish | NOEC (96h) = 11.1 mg/L for Zebrafish | (17) |
| Acute toxicity to invertebrates | NOEL (48h) = 50 mg/L, LOEL (48h) = 100 mg/L, Flue Dust T Acute Immobilization Test to Daphnia magna Static | (18) |
| Acute toxicity to algae | NOEL (72h) = 6,25 mg/L, LOEL (72h) = 12,5 mg/L, Flue Dust T Alga, Growth Inhibition Test with Desmodesmus subspicatus | (19) |
| Acute toxicity to microorganisms | EC50 (72h) = 596 mg/L, Flue Dust T Respiration Inhibition Test with Activated Sludge. | (20) |
| Sediment toxicity | NOEC = 875 mg/kg, LC50 = 9931 mg/kg of dry weight sediment, Sediment Phase Toxicity Test Results with Corophium volutator. | (21) |
| Toxicity to terrestrial arthropods | NOEC = 1000 mg/kg soil dry weight, Flue Dust T Earthworm (Eisenia fetida), Acute Toxicity Test in Artificial Soil. | (22) |
| Toxicity to terrestrial plants | NOEC = 1000 mg/kg soil dry weight, tested plant species (oats, rapes, soy beans), Terrestrial Plant Test, Seedling Emergence and Growth Test | (23) |
| Toxicity to soil microorganisms | NOEC (8d) = 1000 mg/kg soil dry weight, NOEC (28d) = 500 mg/kg soil dry weight, Soil Micro-Organisms: Nitrogen Transformation Test | (24) |

The addition of large amounts of flue dust to water may, however, causes a rise in pH and may, therefore, be toxic to aquatic life under certain circumstances.

### 12.2. Persistence and degradability

Not relevant as flue dust is an inorganic material. After hydration, flue dust lumps present no toxicity risks.

### 12.3. Bioaccumulative potential

Not relevant as flue dust is an inorganic material. After hydration, flue dust lumps present no toxicity risks.

### 12.4. Mobility in soil

Not relevant as flue dust is an inorganic material. After hydration, flue dust lumps present no toxicity risks.

### 12.5. Results of PBT and vPvB assessment

Not relevant as flue dust is an inorganic material. After hydration, flue dust lumps present no toxicity risks.

### 12.6. Other adverse effects

Not relevant.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Flue dust may always be reused. Waste treatment methods do not apply. Do not dispose of into sewage systems or surface waters.

## SECTION 14: Transport information

Flue dust is not covered by the international regulation on the transport of dangerous goods (IMDG,

IATA, ADR/RID); no classification is required.

No special precautions are needed apart from those mentioned under Section 8.

### 14.1. UN number

Not relevant.

### 14.2. UN proper shipping name

Not relevant.

### 14.3. Transport hazard class(es)

Not relevant.

### 14.4. Packing group

Not relevant.

### 14.5. Environmental hazards

Not relevant.

### 14.6. Special precautions for user

Not relevant.

### 14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not relevant.

## SECTION 15: Regulatory information

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

Flue dust is registered according to Regulation (EC) 1907/2006.

The so-called “Good practice guides” which contain adviceon safe handling practices can be found from: http://www.nepsi.eu/good-practice-guide.aspx.

These good practices have been adopted under the Social Dialogue "Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it by Employee and Employer European sectoral associations.

### 15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out, due to the flue dust registration obligation.

## SECTION 16: Other information

### 16.1 Indication of changes

Supersedes March 2009 version and incorporates requirements of Regulation (EC) No 1272/2008.

### 16.2 Abbreviations and acronyms

**ACGIH:** American Conference of Industrial Hygienists

**ADR/RID:** European Agreements on the transport of Dangerous goods by Road/Railway

**APF:** Assigned protection factor

**CAS:** Chemical Abstracts Service

**CLP:** Classification, labelling and packaging (Regulation (EC) No 1272/2008)

**COPD:** Chronic Obstructive Pulmonary Disease

**DNEL:** Derived no-effect level

**EC50:** Half maximal effective concentration

**ECHA:** European Chemicals Agency

**EINECS:** European Inventory of Existing Commercial chemical Substances

**EPA:** Type of high efficiency air filter

**EpiDerm TM:** Reconstructed human epidermis for testing purposes

**ES:** Exposure scenario

**GefStoffV:** Gefahrstoffverordnung

**HEPA:** Type of high efficiency air filter

**H&S:** Health and Safety

**IATA:** International Air Transport Association

**IMDG:** International agreement on the Maritime transport of Dangerous Goods

**LC50:** Median lethal dose

**LOEL:** Lowest observed effect level

**MEASE:** Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ebrc/ebrc-mease.php

**MS:** Member State

**NOEC:** No observed effect concentration

**NOEL:** No observed effect level

**OECD:** Organisation for Economic Co-operation and Development

**OECD TG:** OECD Technical Guidance

**OELV:** Occupational exposure limit value

**PBT:** Persistent, bio-accumulative and toxic

**PNEC:** Predicted no-effect concentration

**PROC:** Process category

**REACH:** Registration, Evaluation and Authorisation of Chemicals

**SCOEL:** Scientific Committee on Occupational Exposure Limit Values

**SDS:** Safety Data Sheet

**STOT:** Specific target organ toxicity

**STP:** Sewage treatment plant

**TLV-TWA:** Threshold Limit Value-Time-Weighted Average

**TRGS:** Technische Regeln für Gefahrstoffe

**UVC:** Substance of Unknown or Variable composition, Complex reaction products

**UVCB:** Substance of Unknown or Variable composition, Complex reaction products or Biological materials

**VLE-MP:** Exposure limit value-weighted average in mg by cubic meter of air

**vPvB:** Very persistent, very bio-accumulative

### 16.3 Key literature references and sources of data

(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive,

2006. Available from: http://www.hse.gov.uk/pubns/web/portlandcement.pdf.

(2) American Conference of Governmental Industrial Hygienists, 2008

(3) SCOEL/SUM/137 February 2008, Recommendation from the Scientific Committee on Occupational Exposure Limits for Calcium oxide (CaO) and calcium hydroxide (Ca(OH)2), European Commission, DG Employment, Social Affairs and Equal Opportunities.

(4) Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ebrc/ebrc-mease.php.

(5) TNO report V8816/01, Acute dermal toxicity study with Flue Dust T (REACH) in rats, August 2010.

(6) TNO report V8801/01, An acute (4-hour) inhalation toxicity study with Flue Dust T (REACH)-fine in rats, July 2010.

(7) TNO report V8899/01, An Combined oral repeated dose toxicity study with the reproductive/development toxicity screening test with Flue dust T (REACH) in rats, May 2010.

(8) TNO reports V8932/01 andV8932/02, In vitro skin irritation and corrosion test with Flue Dust T (REACH) using EpiDerm reconstituted skin membranes, August 2010.

(9) Observations on the effects of skin irritation caused by cement, Kietzman et al, Dermatosen, 47, 5, 184-189 (1999).

(10) TNO report V8815/15, Evaluation of eye irritation potential of Flue Dust T (REACH) in vitro using the isolated chicken eye test, May 2010.

(11) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.

(12) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002). http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf.

(13) TNO report V8815/15, In vitro micronucleus test with Flue Dust T-fine (REACH) in cultured human bronchial epithelial BEAS-2B cells, August 2010.

(14) CEMBUREAU Study report, Toxicological properties of cement related particles in relation to observed malignant effects in head-neck cancers, Borm, December 2006.

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(24) DR.U.NOACK-LABORATORIEN study report TBN13593, Flue Dust T, Soil Micro-Organisms: Nitrogen Transformation Test; July 2010.

## 16.4 Training Advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this Safety Data Sheet.

## 16.5 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.

It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.