

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

1.1. Product identifier

Product form : Substance

Chemical name : Barium Carbonate

EC no : 208-167-3

CAS No. : 513-77-9

REACH registration No. : 01-2119489177-25

EU Index No : 056-003-00-2

Synonyms : Barium Carbonate Carbonic Acid, Barium Salt (1:1), Barium Monocarbonate.

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

1.2.1. Relevant identified uses Use of the substance/preparation: General chemical production and processes. Reactive processing aid. Industrial use in manufacture of other barium substances or formulation of barium carbonate containing preparations. Glass. Ceramics and electro-ceramic materials or glazes, frits and enamels. Welding electrode coating. Preparation of slurry. Manufacture of pyrotechnical products. Welding in industrial / professional settings.

1.2.2. Uses advised against

None

Full text of use descriptors: see section 16.

1.3. Details of the supplier of the safety data sheet

Milton Bridge Ceramic Colours Ltd.

Unit 9

Trent Trading Park

Botteslow St.

Hanley

Stoke-On-Trent

Staffs.

ST1 3LY

T +44 (0)1782 274229 - F +44 (0)1782 281591

djb@milton-bridge.co.uk

1.4. Emergency telephone number

T +44 (0)1782 274229 (Office hours only)

djb@milton-bridge.co.uk

SECTION 2: Hazards identification.

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical and Chemical Hazards: Not classified
Human health: Acute Tox. 4 – H302
Environment: Not classified

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC

Xn; R22

Full text of R-phrases: see section 16

Adverse physicochemical, human health and environmental effects

HARMFUL IF INGESTED

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictograms (CLP):

GHS06



Signal word (CLP): Warning

Hazard statements (CLP) :
H302 - Harmful if swallowed

Precautionary statements
(CLP) :

P270 – Do not eat, drink or smoke when using this product.

P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P330 – Rinse mouth

Supplementary Precautionary Statements (CLP):

P264 – Wash contaminated skin thoroughly after handling

P501 – Dispose of contents/containers in accordance with regional regulations.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH, annex XIII.

This substance/mixture does not meet the vPvB criteria of REACH, annex XIII.

SECTION 3: Composition/information on ingredients.

3.1. Substances

Name : Barium Carbonate

Reach Registration number: 01-2119489177-25

CAS No. : 513-77-9

EC no : 208-167-3

EU Index No. 056-003-00-2

Composition Comments:

Purity >90 -<100% w/w

3.2. Mixtures

Not applicable

SECTION 4: First aid measures.

4.1. Description of first aid measures

First-aid measures after inhalation: Remove victim to fresh air. If breathing is difficult, give oxygen. If breathing stops, perform cardio pulmonary resuscitation (CPR). Take to hospital.

First-aid measures after skin contact: Wash immediately with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Seek medical attention if ill effect or irritation develops.

First-aid measures after eye contact : In case of eye contact, immediately rinse with clean water for 10-15 minutes. Call a doctor.

First-aid measures after ingestion : If swallowed, DO NOT INDUCE VOMITING: seek medical advice immediately and show this container or label.

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

HARMFUL IF SWALLOWED

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

Follow advice given in 4.1.

SECTION 5: Firefighting measures.

5.1. Extinguishing media

Use Suitable fire-extinguishing media, appropriate for surrounding materials

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products: The product is non-combustible

Unusual Fire & Explosion Hazards: No unusual fire or explosion hazards noted.

Specific Hazards: The product is non-combustible. If heated, harmful vapours may be formed.

5.3. Advice for firefighters

Protection during firefighting: Use of approved supplied air or self-contained breathing apparatus operated in positive pressure mode are satisfactory. Totally impervious protective suits, gloves, and boots must be worn.

SECTION 6: Accidental release measures.

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of dust. Avoid inhalation of vapours and contact with skin and eyes.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and soil. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Remove any spillage with a suitable vacuum cleaner. If not possible collect spillage with shovel, brush or the like. Collect in containers and seal securely.

6.4. Reference to other sections

See section 8 and 13 for more information.

SECTION 7: Handling and storage.

7.1. Precautions for safe handling

Precautions for safe handling: Do not breathe dust. Avoid all contact with this substance Wash hands plentifully and other exposed areas with water after handling. Remove contaminated clothing and shoes. Wash clothing before re-using.

Packagings: Even those that have been emptied, will retain product residue. Always obey safety warnings and handle empty packagings as if they were full. Avoid all contact with this substance.

Hygiene measures: When using do not eat, drink or smoke. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Remove contaminated clothing and shoes.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in dry, cool, well-ventilated area. Keep away from food, drink and animal feeding stuffs.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection.

8.1. Control parameters

Name	STD	TWA – 8 Hrs	STEL – 15 Min	Notes
BARIUM CARBONATE (hazardous for transport)	WEL	0.5mg/m ³		as Ba
DNEL				
Industry – inhalation – Long Term – Local Effects		0.72mg/m ³		
Consumer – inhalation – Long Term – Local Effects		0.14mg/m ³		
PNEC (Water)				
Freshwater		227.8mgBa/L{327.3}*		
STP		50.1mgBa/L{72}		
Sediment (Freshwater)		792.7mgBa.kg.dw{1138.}		
Soil		207.7mgBa/kg.dw{298.4}		
* {mgBaCo3/L}. PNEC values are derived using the information provided in section 12.				

8.2. Exposure controls

Appropriate engineering controls: Use as far as possible in a closed system. Provide a regular control of the atmosphere. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Local exhaust and general ventilation must be adequate to meet exposure standards. Please refer to the annex (exposure scenarios).

Hand protection: Use gloves resistant to chemical products corresponding to EN 374:3. Take advice to gloves' manufacturer.

Eye protection: Wear safety glasses with side shields according EN 166.

Skin and body protection: Wear closed protective clothing.

Respiratory protection: Use respiratory protection mask according to EN 140 or EN 405 with filter type P3 according to EN 143:2000 or FFP3 according to EN 149:2001.

Environmental exposure controls: Avoid release to the environment.

SECTION 9: Physical and chemical; properties.

Physical state	Solid Powder.
Colour	White.
Odour	Odourless.
Odour threshold	Not applicable
pH-Value, Conc. Solution at 16mg/l (16°C)	7-8
Relative evaporation rate (butylacetate=1)	No data available
Melting point	Not applicable
Freezing point	No data available
Flash point	Not flammable
Self ignition temperature	Not applicable
Decomposition temperature	1,380°C
Flammability (solid, gas)	Not flammable
Vapour pressure	Negligible.
Relative vapour density at 20 °C	4.31g/cm ³
Bulk Density	350kg/m ³
Solubility in water	Soluble in water
Solubility Value (g/100g H ₂ O@20°C)	More than or equal to 14mg/l @20°C
Viscosity, kinematic	Not applicable
Viscosity, dynamic	Not applicable
Explosive properties	Non oxidizing material according to EC criteria.
Oxidising properties	Non oxidising material according to EC criteria
Explosive limits	Not applicable

9.1. Other information

Mol. Weight 197.3g/mol

SECTION 10: Stability and reactivity.

10.1. Reactivity

Contact with acid liberates CO₂

10.2. Chemical stability

Stable under normal temperature conditions and recommended use.

10.3. Possibility of hazardous reactions

When barium carbonate decomposes it forms barium oxide.

10.4. Conditions to avoid

Avoid heat. Avoid dust formation. Avoid contact with acid.

10.5. Incompatible materials

Acids. Barium Carbonate is incompatible with bromine trifluoride or 2-furanperoxycarboxylic acids.

10.6. Hazardous decomposition products

Barium Oxide.

SECTION 11: Toxicological information.

11.1. Information on toxicological effects

Acute Toxicity:

Acute Toxicity (LD50 oral rat): <284mg/kg. Test method(s) OECD 401.

Remarks on LD50 value: When reading across from barium chloride data to barium carbonate, initially an LD50 of ≤ 284mg/kg bw can be calculated stoichiometrically. The proximity of this value to the thresholds for classification as toxic. (≤ 300mg/kg bw according to regulation EC 1272/2008 and >200mg/kg bw according to directive 67/548/EEC) and the more than 100-fold lower solubility of barium carbonate (3.7g/L at 37°C/media pH 1.5) compared to barium chloride (510.4g/L at 37°C/media pH 1.5) is taken as reasoning to propose classification of barium carbonate with "harmful if swallowed" with an LD50 of ≤300mg/kg bw

Acute Toxicity (Dermal LD50): >1,895mg/kg.

According to SIAR 2008 and in the NIAR report 2008 (based on Barium Carbonate)

Acute Toxicity (Inhalation LC50):

Technically not feasible. Not classified.

Skin Corrosion/Irritation:

Not irritating. Test method(s): - in vitro study, EU method B.46, reconstructed human epidermis Testing was carried out using a structural analogue.

Serious eye damage/irritation:

Not irritating. Test method(s): OECD 405, Rabbit.

Respiratory or skin sensitisation:

Not sensitising. Testing was carried out using a structural analogue. Test method(s): OECD 429.

Skin sensitisation:

Local Lymph Node Assay (LLNA) Mouse.

Not sensitising Testing was carried out using a structural analogue. Test methods(s): OECD 429.

Germ cell mutagenicity:

Negative. Testing was carried out using a structural analogue.

(i) Gene mutation (OECD 476, mouse lymphoma cells).

(ii) Bacterial reverse mutation assay (Ames test, OECD 471, S Typhimurium).

(iii) In vitro mammalian chromosome aberration test (OECD 473, Chinese hamster ovary (CHO)).

Carcinogenicity:

Oral rat. Testing was carried out using a structural analogue. 104-105 weeks.

This substance has no evidence of carcinogenic properties. Based on available data the classification criteria are not met.

Reproductive Toxicity:

Reproductive Toxicity – Fertility

Fertility: NOAEL 179.5mg/kg Rat.

The units expressed in 'mg/ig' of : barium.

The decision on classification and labelling will be postponed till the results from testing (two generation study and prenatal development study) are available. As test substance barium chloride will be used, read across to barium carbonate is envisaged. A NOAEL (=179.5 mgBa(2+)(kg) based on screening study conducted with barium chloride dihydrate (oral in drinking water) in rats could be derived for effect on fertility.

Reproductive Toxicity – Development

Not classified.

Specific target organ toxicity -single exposure:

STOT – Single exposure

Not classified.

Specific target organ toxicity -repeated exposure:

STOT – Repeated exposure

Not classified.

Aspiration hazard:

Viscosity

Not applicable.

General information

This substance does not fulfil the criteria for CMR Cat 1 and Cat 2 according to Regulation EC 1272/2008. The primary routes of human exposure to barium are from inhalation of aerosols and ingestion of food and drinking water containing barium. Testing was carried out using a structural analogue – Barium Chloride Dihydrate (BaCl₂.2H₂O) CAS Nr= 10326-27-9.

SECTION 12: Ecological information.

12.1. Toxicity

Conclusion on the environmental classification and labelling: The acute reference value (ARV) for BaCO₃ is 20.8 mg/l, based on the ARV for Ba (ie 14.5 mgBa/L). This acute reference value exceeds solubility of the compound. Therefore there is no acute classification for this compound. The chronic reference value is 4.17 mg BaCO₃/L, ie > 1 mg/L, and therefore no chronic classification is required. Additionally, there is no evidence for bioaccumulation or biomagnification in the environment (see section 12.3). Consequently, BaCO₃ has no environmental classification.

12.2. Persistence and degradability

Degradability

Not relevant

12.3. Bioaccumulative potential

Bioaccumulative potential

Will not bio-accumulate.

BCF for fish: 37.6 - 99 L/kg w.w

Partition coefficient

Not Applicable - Inorganic chemical.

12.4. Mobility in soil

Mobility:

Taking into account the relative low K_d value for barium, the barium ions release by barium carbonate are leachable through normal soil and are mobil in sediment. The following typical log K_d-values have been determined for different environmental compartments: (i) Sediment 3, 478 K_d value (L/kg), 3.54 Log K_d (Salminen et al. (2005 FOREGS data). (ii) Suspended particulate matter (spm) 5, 217 K_d value (L/kg), 3.72 Log K_d (Estimated data (ratio of 1.5 on K_d, sediment). * (iii) Soil 60.3 K_d value (L/kg), 1.78 Log K_d (Crommentuyn et al. (1997). * The estimated value for spm value is supported by K_d values that were reported for spm by Popp and Laquer (1980) for N-American Rivers (range of Log K_d: 2.65 - 3.91) and the value derived by Li et al (1984) for the River Hudson (log K_d: 3.78).

12.5. Results of PBT and vPvB assessment

Not Classified as PBT/vPvB by current EU criteria.

12.6. Other adverse effects

Toxicity to birds: Based on available literature elevated Ba levels in eggs may result in deformations of the feet and malpositioning of the embryo in the egg.

SECTION 13: Disposal considerations.

General information

Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority.

13.1. Waste treatment methods

Dispose of waste and residues in accordance with local authority requirements.

SECTION 14: Transport information.

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN No. (ADR/RID/ADN) 1564

UN No. (IMDG) 1564

UN No. (ICAO) 1564

14.2. UN proper shipping name

Proper Shipping Name UN 1564 BARIUM COMPOUND, N.O.S. (Barium Carbonate), 6.1, III, (E)

Proper Shipping Name BARIUM COMPOUND, N.O.S.

14.3. Transport hazard class(es)

ADR/RID/ADN Class 6.1

ADR/RID/ADN Class Class 6.1:Toxic substances.

ADR Label No. 6.1

IMDG Class 6.1

ICAO Class/Division 6.1



14.4. Packing group

Packing group (UN): III Code tunnel : (E)

14.5. Environmental hazards

Other information: No supplementary information available.

14.6. Special precautions for user

EMS F-A, S-A

Emergency Action Code 2Z

Hazard No. (ADR) 60

Tunnel Restriction Code (E)

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

Not applicable

SECTION 15: Regulatory information.

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Contains no REACH candidate substance

Other regulations, restrictions and prohibition regulations: Not required.

15.1.2. National regulations

Regional legislation: SUBSTANCE LISTED IN THE ANNEX I OF DIRECTIVE 2003/105/CE AMENDING DIRECTIVE 96/82/CE (CONTROL OF MAJOR - ACCIDENT HAZARDS INVOLVING DANGEROUS SUBSTANCES).

15.2. Chemical safety assessment

A Chemical Safety Assessment has been carried out.

SECTION 16: Other information.

Indication of changes: according to Regulation (EC) No. 1907/2006 (REACH).

Data sources: Reach dossier.

Abbreviations and acronyms:

ADN: European Agreement concerning international carriage of Dangerous goods by Inland waterways

ADR: European Agreement concerning international carriage of Dangerous goods by Road

AF: Assessment factor

BCF: Bio-concentration factor

Bw: Body weight

CAS: Chemical Abstracts Service

CLP: Classification, labelling, packaging

CSR: Chemical Safety Report

DMEL: Derived maximum effect level

DNEL: Derivative No effect Level

EC: European Community

ELV: Emission limit values

EN: European Norm

EUH: European Hazard Statement

EWC: European Waste catalogue

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods

LC50: Median lethal concentration

LD50: Median lethal dose

NOAEL: No-observed-adverse-effect-level

NOEC: No observed effect concentration

NOEL: No observed effect level

OEL: Operator exposure level

PBT: Persistent, bio-accumulative, Toxic

PEC: Predicted effect level

PNEC: Predicted No effect Concentration

REACH: Registration, evaluation and authorisation of chemicals

RID: Regulations concerning the international carriage of dangerous goods by rail

STEL: Short Term Exposure Limit

TWA: Time weighted average

vPvB: Very persistent, very bio-accumulative.

Training advice: None.

Full text of R-, H-, P and EUH-phrases:

Acute Tox. 4	Acute toxicity Category 4
H302	Harmful if swallowed
R22 P270	Harmful if swallowed
P301+P31	Do not eat, drink or smoke when using this product.
2 P330	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth
P264	Wash contaminated skin thoroughly after handling
P501	Dispose of contents/containers in accordance with regional regulations.

SDS EU (Reach Annex II)

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