Material Safety Data Sheet
Sodium Carbonate

Edition: 01/04/2011

In compliance with Annex II of Regulation EC 1907/2006(REACH), Regulation (EC) 1272/2008 and Regulation (EC) 453/2010

1) Identification of substance/preparation and of the company undertaking

Material	Sodium Carbonate
Synonyms:	Disodium carbonate, soda ash
Chemical Formula :	Na_2CO_3
EC No	207-838-8
CAS No	497-19-8
REACH Registration No	01-2119485498-19-0018
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1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

glass production; intermediate in chemicals production; water treatment chemicals; washing and cleaning products; other industrial, professional and consumer uses.

1.2.2. Uses advised against

None identified.

2) Hazards identification

2.1. Classification of the substance or mixture

2.1.1 Classification according to Regulation (EC) 1272/2008 [CLP/GHS]

Classification: Eye Irritant 2

2.1.2 Classification according to Directive 67/548/EEC

Classification: Irritating to eyes

2.2. Labelling

2.2.1 Labelling according to Regulation (EC) 1272/2008 [CLP/GHS]

Hazard Pictograms:

Signal word: Warning
Hazard Statements
H319 : Causes serious eye irritation
Precautionary Statements:
P264: Wash hands and face thoroughly after handling
P280: Wear protective gloves/protective clothing/eye protection/face protection
P305 + P351 + P338: IF IN EYES, rinse cautiously with water for several minutes, remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313: If eye irritation persists: Get medical advice/attention

2.2.2 Labelling according to Directive 67/548/EEC

Symbol: Xi - irritant
Risk Phrases:
R36 : Irritating to eyes
Safety Phrases:
S2: Keep out of the reach of children
S22: Do not breathe dust
S24: Avoid contact with skin

2.3. Other hazards

The substance does not meet the criteria for PBT or vPvB according to Annex XIII of the REACH Regulation EC 1907/2006 (an inorganic substance)

No other hazards identified

3) Composition/information on ingredient

3.1. Substances
Main constituent: Sodium carbonate
Formula: Na_2CO_3
Purity %w/w (typical): >99.0
CAS Number: 497-19-8
EC Number: 207-838-8

IMPURITIES No impurities relevant for classification and labelling

4) First Aid Measures

4.1. Description of first aid measures

General advice: No known delayed effects

Following inhalation: Remove to fresh air, keep warm and at rest. If symptoms persist, seek medical attention

Following skin contact: Remove contaminated clothing and wash before re-use. Wash off with soap and water. If symptoms persist, seek medical attention.

Following eye contact: Remove contact lenses if present. Irrigate eye thoroughly with eye wash solution or clean water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. If eye irritation persists seek medical attention.

After ingestion: DO NOT induce vomiting. Wash out mouth with water and give plenty of water to drink (at least 300 ml.). Obtain medical advice if necessary.

5) Fire Fighting

5.1. Extinguishing media

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media: None.

5.2. Special hazards arising from the substance or mixture

None.

5.3. Advice for firefighters

No special precautions required

6) Accidental Release

6.1. Personal precautions

6.1.1. For non-emergency personnel

Keep dust levels to a minimum. Wear suitable protective equipment (see Section 8)

6.2. Environmental precautions

Prevent uncontrolled discharges into the environment (rivers, water courses, sewers etc.) Avoid any mixture with an acid into sewer/drains (CO_2 gas formation).

6.3. Methods and material for containment and cleaning up

In all cases avoid dust formation. Use vacuum suction, or shovel into bags. Collect as much as possible in a suitable clean container, preferably for re-use, otherwise for disposal (See Section 13)

6.4. Reference to other sections

For more information on exposure controls/personal protection or disposal considerations, please see section 8 and 13.

7) Handling/Storage

7.1 Precautions for Safe Handling

7.1.1 Protective measures

Keep dust levels to a minimum. Ensure adequate ventilation. Wear protective equipment (see Section 8.2). Keep away incompatible materials

7.1.2 Advice on general occupational hygiene

Good personal and housekeeping practices to be used. No drinking, eating or smoking at the workplace

7.2 Conditions for safe storage, including any incompatibilities

Store in a dry place. Store in original, closed and correctly labelled container. Store away from incompatible materials.

8) Exposure Controls/Personal Protection

8.1. Control parameters

8.1.1 Occupational Exposure Standards

Not listed by H&SE (Guidance Note EH40) or ACGIH
Recommended Limits: WEL 10mg/m^3 (total dust) (8hr TWA)
4mg/m^3 (respirable dust) (8hr TWA)

8.1.2 DNEL's/PNEC

Exposure route of relevance	DNELs (local effects)			
	Workers		General Population	
	Long term	Acute	Long term	Acute
Inhalation	10 mg/m^3			

PNEC:
The lowest L(E)C_{50} value is > 100 mg/l (48-h EC_{50} is 200 mg/l in daphnids *(Ceriodaphnia* sp)). Therefore sodium carbonate need not be classified according to Directive 67/548/EEC and EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008
Environmental Classification is not warranted

8.2. Exposure controls

Appropriate engineering controls:
provide appropriate exhaust ventilation at places where dust is formed
apply technical measures to comply with the occupational exposure limits

Personal Protection:

Eye/face protection
wear eye/face protection rated to protect eyes against dust (EN166) eg.safety eye shields with dust protection, goggles or face visor

Hand protection
wear suitable chemical resistant protective gloves, that comply with the specification of EC Directive 89/686/EEC and the related standard EN374. Suitable materials, Neoprene or natural rubber

Skin/body protection
dust impervious protective suit
rubber or plastic safety boots

Respiratory protection
in the case of high dust levels wear suitable respiratory protective equipment eg.dust mask or respirator, that conform to national/international standard, EN143. Recommended filter tpe P2

8.3 Environmental Exposure Controls
contain any spillage
avoid discharges to the environment
dispose of any rinse water in accordance with local and national regulations

9) Physical/Chemical Properties

Appearance:	white powder	
Odour:	odourless	
Odour threshold:	no information available	
pH:	>11	(saturated solution, study result, OECD Guideline105)
Melting/freezing point:	851^{o} c	(published data)
Boiling point:	not applicable	(melting point >300^{o} c)
Flash point:	not applicable	(inorganic substance)
Evaporation rate:	not applicable	(melting point >300^{o} c)
Flammability:	non-flammable	(study result, EU Method A.10))
Upper flammability limit:	non-flammable	
Lower flammability limit:	non-flammable	
Vapour pressure:	not applicable	(inorganic substance, vapour pressure negligible)
Vapour Density:	not applicable	
Relative density:	2.52 @ 20^{o}c	(study result, EU Method A.3)
Water solubility:	212.5 g/l @20^{o}c	(study result, OECD Guideline 105)
Partition coefficient:	not applicable	(inorganic substance)
Auto-ignition temperature:	non-flammable	
Decomposition temperature:	not information available	
Viscosity:	not applicable	(solid)
Explosive properties:	non-explosive	(void of chemical groups associated with Explosive properties)
Oxidising properties:	non-oxidising	(based on the chemical structure of the substance and the oxidation state of the constituent element)

10) Stability/Reactivity

10.1. Reactivity

Decomposes by reaction with strong acids to evolve carbon dioxide.

10.2. Chemical stability

Stable under recommended storage conditions (see Section 7).

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

Contact with acids unless under controlled conditions. Exposure to moisture

10.5. Incompatible materials

Finely divided aluminium

10.6. Hazardous decomposition products

None

11) Toxicological Info

11.1. Information on toxicological effects

Toxicity endpoints	Details of the effects assessment
Acute toxicity	Oral LD_{50} , rat 2800 mg/kg bw Dermal LD_{50} , rabbit >2000 mg/kg bw Method: EPA 16 CFR 1500.40 Inhalation LC50 , rat 2300 mg/m3 air Method: based on OECD Guideline 403 Values exceed the cut off limit of 2000mg/kg established by EU Directive 67/548/EEC and EU Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No. 1272/2008 **Classification for acute toxicity: is not warranted**
Irritation/corrosion	Eye irritation: irritating Method: OECD Guideline 405 Skin irritation: not irritating Method: OECD Guideline 404 Respiratory irritation: not irritating Based on available data **Classification for Eye irritancy: Xi, R36 (irritating to eyes) according to Directive 67/548/EEC; Category 2, H319 (causes serious eye irritation) according to CLP Regulation (EC) 1272/2008** **Classification for Skin irritancy: is not warranted** **Classification for Respiratory irritancy: is not warranted**
Sensitisation	No data available on the sensitisation of sodium carbonate. Sodium carbonate is considered not to have any sensitising properties, based on the physiological role of both its constituent ions and its long-term historical and wide dispersive use in industrial processes and consumer products. **Classification for sensitisation: is not warranted**
	Oral: Sodium carbonate dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore,

Repeated dose toxicity	repeated dose toxicity studies are considered (scientifically) unnecessary, in accordance with column 2 of REACH Annex VIII and IX. Furthermore, sodium carbonate is used as a food additive, which confirms that the substance has a low Repeated dose toxicity. Dermal: Sodium carbonate dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, repeated dose toxicity studies are considered (scientifically) unnecessary, in accordance with Column 2 of REACH Annex VIII and IX
	Inhalation: Sodium carbonate dissociates into ions that are present physiologically in relatively high levels in vertebrates. Therefore, repeated dose toxicity studies are considered (scientifically) not necessary, In accordance with column 2 of REACH Annex VIII and IX. **Classification for repeated dose toxicity: is not warranted**
Mutagenicity	In vitro – The available *in vitro* tests (SOS chromotest with sodium carbonate and Ames test with sodium bicarbonate) were negative. Furthermore sodium bicarbonate is naturally present in cells and both the structure of sodium bicarbonate and sodium carbonate do not indicate a genotoxic potential. Therefore, there is no reason to evaluate the potential genotoxicity of sodium carbonate further and no genotoxic effects are expected. **Classification for mutagenicity is not warranted**
Carcinogenicty	No data available for carcinogenicity of sodium carbonate. Although the substance has a wide and varied use, there are no indications that it can induce hyperplasia, pre-neoplastic lesions or is mutagenic. Therefore, a carcinogenicity study is considered unnecessary **Classification for carcinogenicity is not warranted**
Reproductive toxicity	Fertility: No data available Developmental toxicity: In accordance with Section 1 of REACH Annex XI, testing does not appear scientifically necessary, as the substance will usually not reach the foetus or the male and female reproductive organs when exposed orally, dermally or by inhalation, as it does not become available systemically. As such, it is considered not useful to perform a reproduction study **Classification for reproductive toxicity according to Regulation (EC) 1272/2008 is not required**

12) Ecological Information

12.1.1 Acute/short term toxicity to fish

LC_{50} (96h) for freshwater fish: 300 mg/l

12.1.2 Chronic/long term toxicity to fish

Study scientifically unjustified, sodium carbonate dissociates readily into sodium and carbonate ions in an aquatic environment. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore, there is a continuous source of both ions into the environment and have been measured extensively in aquatic ecosystems

12.1.3 Acute/short term toxicity to aquatic invertebrates

EC_{50} (48h) for freshwater invertebrates: 200-227 mg/l

12.1.4 Chronic/long term toxicity to aquatic invertebrates

Study scientifically unjustified, sodium carbonate dissociates readily into sodium and carbonate ions in an aquatic environment. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore, there is a continuous source of both ions into the environment and have been measured extensively in aquatic ecosystems

12.1.5 Acute toxicity to algae and aquatic plants

Study scientifically unjustified, sodium carbonate dissociates readily into sodium and carbonate ions in an aquatic environment. Both ions originally exist in nature, and their concentrations in surface water are dependent on various factors, such as geological parameters, weathering and human activities. Therefore, there is a continuous source of both ions into the environment and have been measured extensively in aquatic ecosystems

12.1.6 Toxicity to soil macro-organisms

In accordance with REACH Annex XI a study is not required as in water sodium carbonate is dissociated into sodium and carbonate ions, both of which will not adsorb on particulate matter. Furthermore, exposure of the soil compartment is unlikely

12.1.7 Toxicity to terrestrial plants

In accordance with REACH Annex XI a study is not required as in water sodium carbonate is dissociated into sodium and carbonate ions, both of which will not adsorb on particulate matter. Furthermore, exposure of the soil compartment is unlikely

12.2 Persistence and degradeability

In water: Not applicable (quickly dissociates)
In soil: Not applicable (inorganic substance)
In sediment: Not applicable (inorganic substance)

12.3 Bioaccumulative Potential

Not bioaccumulative (inorganic substance that in water dissociates into sodium and carbonate ions, which do not accumulate in living tissues)

12.4 Mobility in Soil

If sodium carbonate is emitted to soil it can escape to atmosphere as carbon dioxide, precipitate as a metal carbonate, form complexes or stay in solution

12.5 Results of PBT and vPvB Assessment

According to Annex XIII of REACH Regulation inorganic substances do not require assessment

12.6 Other Adverse Effects

No other adverse effects are identified

13) Disposal Considerations

13.1. Waste treatment methods

If recycling or re-use is not practicable, dispose of in compliance with local or national regulations
Neutralise with acid under controlled conditions
Dilute with plenty of water

Packaging:
Where possible, recycling is preferred to disposal or incineration
Clean container with water, dispose of rinse water in accordance with local or national regulations
Must be incinerated in a registered incineration plant with permit from the local authorities

14) Transport Information

Sodium carbonate is not classified as hazardous for transport

14.1 UN Number

Not regulated

14.2 UN Proper Shipping Name

Not regulated

14.3 Transport Hazard Class(es)

Land Transport:	ADR/RID	Not restricted
Inland Waterway Transport:	ADN	Not regulated
Sea Transport:	IMO/IMDG	Not regulated
Air Transport:	ICAO-TI/IATA-DGR	Not regulated

15) Regulatory Information

15.1. Safety, health and environmental regulations

Water hazard class: WGK 1, VwVwS (Germany)
TSCA Inventory: Listed

15.2 Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been undertaken on sodium carbonate

16) Other Information

Abbreviations and acronyms:
WEL: Workplace exposure limit
ACGIH: American Conference of Industrial Hygiene
TWA: Time Weighted Average
DNEL: Derived no effect level
NOEC: No Observed Effect Concentration
PBT: Persistent, Bioaccumulative, Toxic
vPvB: very Persistent, very Bioaccumulative
PNEC: Predicted No Effect Concentration
ADR: European Agreement Concerning the International Carriage of Dangerous Goods by Road

RID: International Rule for Transport of Dangerous Substances by Rail
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway
IMO/IMDG: International Maritime Organization/International Maritime Dangerous Goods Code
ICAO/IATA: International Civil Aviation Organization/International Air Transport Association
OECD: Organisation of Economic Co-operation and Development
SIDS: Screening Information Data Set

16.3 Key literature references and sources of data

Data is taken from the Chemical safety report (CSR) and/or OECD SIDS report for sodium carbonate.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.
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