


| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 1/17 |

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

1.1. Product identifier

Sodium hydrogencarbonate (CAS No.: 144-55-8, EC No.: 205-633-8)

Synonyms: Baking soda, sodium bicarbonate, bicarbonate, sodium hydrogen carbonate for pharmacy, Sobic Health Care, food-grade sodium hydrogen carbonate E 500 (ii), Sobic Food, sodium hydrogen carbonate (compact) - fodder material, Sobic Feed, technical sodium hydrogen carbonate (compact), Sobic Tec.

The registration number: 01-2119457606-32-0010.

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

Relevant identified uses: Industrial uses: e.g.: pH regulation, flue gas treatment, formulation in cleaning products, processing aid in metal, mining industry (as a processing additive), chemical, pulp and paper production, food, feed and pharmaceutical industry. Widespread use by professional workers. Consumer uses.

Certain uses of this substance may be regulated or restricted by national or international standards. The buyer and the eventual user, under their sole and absolute responsibility, will comply with these standards, the orders of the relevant authorities and all existing patents and intellectual property rights; will comply with the laws and regulations applicable to our products and/or their operations. The buyer and the possible user must independently determine the suitability of a given product for a specific purpose and method of its use.

Uses advised against: Not determined.

1.3. Details of the supplier of the safety data sheet

Manufacturer: CIECH Soda Polska S.A.

Address: Poland; PL 88-101 Inowrocław; 4 Fabryczna Street

Telephone: +48 52 354 15 00

Distributor: CIECH S.A.


Address: Poland; PL 00-684 Warszawa; 62 Wspólna Street,

Telephone: +48 572 660 404

E-mail address of the person responsible for the SDS: sds@ciechgroup.com

1.4. Emergency telephone number

112 (emergency call), 999 (emergency telephone number)

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 2/17 |

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 1272/2008/EC:

Does not meet the criteria of classification.

2.2. Label elements

Label accordance with Regulation 1272/2008/EC (CLP)

Hazard pictograms, signal words: None.

Hazard statements: None.

Precautionary statements: None.

2.3. Other hazards

The potential risk is at work: the possibility of sodium hydrogencarbonate dust release, which may exceed the TWA indicator for non-toxic dust (given in section 8.1).


The substance does not meet the PBT or vPvB criteria. The criteria of Annex XIII to the Regulation 1907/2008/EC (PBT or vPvB) does not apply to inorganic substances.

The substance has not been included in the list established in accordance with Article 59 (1) of the REACH Regulation as having endocrine disrupting properties. The substance does not meet the criteria for substances with endocrine disrupting properties as set out in Commission Regulation (EU) 2017/2100 (OJ L 301, 17.11.2017) and Commission Regulation (EU) 2018/605 (OJ L 101, 20.4.2018 as amended).

SECTION 3: Composition/information on ingredients

3.1. Substances

| | |
|-------------------------------------|---------------------------------|
| Substance name: | Sodium hydrogencarbonate |
| Concentration [%]: | 80-100 |
| CAS Number: | 144-55-8 |
| EC Number: | 205-633-8 |
| Index Number: | - |
| Classification 1272/2008/EC: | - |

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 3/17 |

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation: Move the affected person to fresh air and keep rested. Seek medical advice if necessary.

Skin contact: Immediately remove contaminated clothing. Flush contaminated skin with plenty of water and soap, then rinse with plenty of water. Seek medical advice if necessary.

Eye contact: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Avoid strong stream of water due to the risk of mechanical damage to the cornea. It is recommended to use permanent or portable eye washers. Seek medical advice if necessary.

Ingestion: Do not induce vomiting. Rinse mouth with water, and then give to drink plenty of water. Seek medical advice if necessary.

Persons providing assistance should use appropriate personal protective equipment (given in section 8.2.2.), ensure adequate general and local ventilation, avoid direct contact with the substance, avoid inhalation of dust.

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

Inhalation: Irritating of mucous membranes and upper respiratory tracks, cough, irregular breath.

Eye contact: May cause slight irritation, tearing, stinging and redness.

Skin contact: May cause slight irritation, redness, pain, itching.

Ingestion: May cause irritation of the gastrointestinal mucosa. By bigger amounts intake vomiting, stomach ache, diarrhea, in drastic cases stomach disruption (CO₂ release) may occur.

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


Remove affected person from the contaminated product of the environment. In the event of health problems, consult your doctor or the center of toxicological concern. Provide the information contained in the SDS. If unconscious do not give anything by mouth.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Extinguishing media suitable to the burning media in the surrounding should be applied.

Unsuitable extinguishing media: Water jet.

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 4/17 |

5.2. Special hazards arising from the substance or mixture

Substance is not inflammable. During combustion produce hazardous products (e.g. carbon oxide, carbon dioxide). Avoid inhalation of combustion products, because they may pose a health risk.

5.3. Advice for firefighters

Wear full protective equipment and self-contained breathing apparatus with independent air circulation. Containers exposed to fire or high temperature cool with water and if possible remove from the danger zone. Take up mechanically. Keep out of drains, surface waters and soil against pollution. Water from fire treated as hazardous pollution and accumulate in separate containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Should restrict access to non-emergency personnel to the area of failure until the completion of the disposal of the product. Wear appropriate personal protective equipment. Do not drink, eat and smoke. Provide adequate local and general ventilation. Avoid direct contact with the substance. Avoid inhalation of dust.

For emergency responders: Wear appropriate personal protective equipment. Do not drink, eat and smoke. Provide adequate local and general ventilation. Avoid direct contact with the substance. Avoid inhalation of dust.

6.2. Environmental precautions

Secure the gullies. Prevent contamination of surface water and ground. In the event of any serious pollution of the environment, notify the appropriate administrative authority, control and rescue services.

6.3. Methods and material for containment and cleaning up

Secure the gullies. Keep damaged packaging. Damaged container and place in a substitute container. Collect the spilled substance mechanically avoiding the formation of dust, transfer to a tightly sealed containers and be disposed of or recycled. Contaminated area with plenty of water.


6.4. Reference to other sections

Disposal - see Section 13. Personal protective equipment - see Section 8.2.2.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not allow to exceed the normative concentrations of hazardous constituents in the workplace. Provide adequate local exhaust and general ventilation. The workplace should be

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 5/17 |

equipped with a safety shower and eyewash station. It is recommended to use fixed (EN 15154-2:2006) or portable (EN 15154-4:2009) eye washers. Prevent against penetration into drains, surface and ground water and soil. Prevent the use of mutually incompatible materials (given in section 10.5).

Mandatory general regulations on occupational health. Do not eat, drink, take drugs at work or smoke. Avoid skin and eye contact. Avoid inhalation of dust. Remove contaminated clothing and protective equipment before entering dining areas. Wash your hands before break and after working with the product. After use, wash the body surface and personal protective equipment. Contaminated clothing should be changed and cleaned before reuse. Use protection measures given in section 8.2.2.

7.2. Conditions for safe storage, including any incompatibilities

Keep in properly labeled, factory tightly sealed, with a label which complies with current regulations. Ensure adequate ventilation. Store in dry, clean and covered from the top compartments with humidity 30 % – 70 % (substance may be lumpy) at the temperature not higher than 35 °C. Keep away from alkali metals, acids. Unit packaging – sacks or big-bags should be placed on pallets. Protect against moisture. During storage and transport substance may form soft, easily crumbled lumps. It is corrosive to metals in the aqueous environment.

7.3. Specific end use(s)

Provided in subsection 1.2.

Follow the instructions given in this SDS.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters


| Substance name | TWA | STEL | BLV |
|----------------|--|------|-----|
| Dusts | 10 mg/m ³ (inhalable dust) | - | - |
| | 4 mg/m ³ (respirable dust) | | |

Legal basis: Ordinance on maximum permissible concentration and intensity of harmful factors in the work environment in accordance with national limit values.

EH40/2005 Workplace exposure limits, fourth edition, published 2020, ISBN 978 0 7176 6733 8.

Monitoring procedures:

Use methods described in European Standards.

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 6/17 |

DNEL:

| Route of exposure | DNEL Workers | | | | DNEL Consumers | | | |
|-------------------|----------------------|-----------------------|------------------------|---------------------------|----------------------|-----------------------|------------------------|---------------------------|
| | Acute, local effect | Acute systemic effect | Chronic, local effects | Chronic, systemic effects | Acute, local effect | Acute systemic effect | Chronic, local effects | Chronic, systemic effects |
| Inhalation | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified |
| Skin | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified |
| Oral | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified | No threat identified |

PNEC:

| The purpose of environmental protection | PNEC |
|---|----------------------|
| Fresh water | No threat identified |
| Freshwater sediments | No threat identified |
| Marine water | No threat identified |
| Marine sediments | No threat identified |
| Food chain | No threat identified |
| Microorganisms in wastewater treatment | No threat identified |
| Soil (agricultural) | No threat identified |
| Air | No threat identified |

8.2. Exposure controls

8.2.1 Appropriate engineering controls

Appropriate precautions for use and storage of the product are given in section 7.


8.2.2 Individual protection measures, such as personal protective equipment

Eye / face protection: Wear suitable protective glasses of goggles type, e.g. made of polycarbonate (EN 166).

Skin Protection: In industrial usage wear protective clothing made of natural materials (cotton) or synthetic fibres and gloves (glove materials: nitrile-, butyl-, neoprene-rubber) or PVC (glove thickness: 0.5 mm, break through time: >480 min.) (EN 374).

Respiratory protection: In the case of high concentrations of dust, use respiratory equipment with particle filter color-coded white and the symbol P. It is recommended to use filtering half masks to protect against particles (EN 149).

Thermal Hazards: Protection is not required.

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 7/17 |

The personal protective equipment used should meet the requirements of Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC (OJ L 81, 31.3.2016). The employer must provide personal protective equipment appropriate to the type of work and meeting all requirements, including maintenance and cleaning.

Concentrations should be monitored hazardous substances in the workplace in accordance with recognized test methods. Mode, method, type and frequency of testing and measurement of harmful factors in the working environment should meet the requirements of local/regional/national laws.

8.2.3 Environmental exposure controls

Do not introduce the product to ground water, sewage, waste water or soil.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--|---|
| Physical state: | Solid – powder or fine crystals (food grade sodium bicarbonate - crystalline masses or crystalline powder; pharmaceutical sodium bicarbonate - crystalline powder) |
| Colour: | food grade sodium bicarbonate – colourless or white pharmaceutical sodium bicarbonate - white or almost white Other types of the product - white |
| Odour: | Odourless |
| Melting point/freezing point: | According to Annex XI (point 2) of the REACH Regulation, the test does not need to be conducted due to the properties of the substance. Sodium hydrogencarbonate starts decomposing before melting. When heated over 50 °C the release of CO ₂ , H ₂ O and Na ₂ CO ₃ starts, resulting in total decomposition at 270 °C. Therefore a melting point cannot be determined |
| Boiling point or initial boiling point and boiling range: | According to Annex VII (point 7.3) of the REACH Regulation the test does not need to be conducted as sodium hydrogencarbonate starts decomposing before boiling |
| Flammability: | The substance is non-flammable (results of a GLP-compliant guideline study, fully adequate for assessment) |
| Lower and upper explosion limit: | According to Annex VII (point 7.11) of the REACH Regulation the test does not need to be conducted since no chemical groups associated with explosive |



Ciech
Soda Polska

SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH)
as amended


SODIUM HYDROGENCARBONATE

Date: 01.07.2013

Revision: 20.12.2022

Page/pages: 8/17

| | |
|---|---|
| Flash point: | properties are present in the molecule. Considering the molecular structure of the substance, explosive properties are not expected According to Annex VII (point 7.9) of the REACH Regulation the test does not need to be conducted as sodium hydrogencarbonate is inorganic |
| Auto-ignition temperature: | Not applicable (based on the known chemical and physical properties of the substance, its chemical structure and experience in use, it can be concluded that sodium hydrogencarbonate does not possess pyrophoric properties and is not flammable on contact with water. Therefore it is considered justified to omit the respective testing) |
| Decomposition temperature: | When heated over 50 °C the release of CO ₂ , H ₂ O and Na ₂ CO ₃ resulting in total sodium hydrogencarbonate decomposition at 270 °C |
| pH: | 8.6 (5 % aqueous solution) at 20 °C |
| Kinematic viscosity: | According to Annex XI (point 2) of the REACH regulation, the study does not have to be conducted due to the properties of the substance. Sodium bicarbonate is a solid. Viscosity is a property of liquid substances. |
| Solubility: | In water: 93.4 g/l at 20 °C and pH = 8.4 Its solubility in most organic solvents is negligible |
| Partition coefficient n-octanol/water (log value): | According to Annex VII (Section 7.8) of REACH, the study does not need to be conducted as sodium bicarbonate is an inorganic substance |
| Vapour pressure: | Study technically not feasible, in accordance with point 2 of Annex XI of the REACH Regulation, vapour pressure test does not need to be conducted due to the properties of the substance: sodium hydrogencarbonate starts decomposing when heated. Sodium hydrogencarbonate is an inorganic salt and therefore the vapour pressure can be considered negligible |
| Density and/or relative density: | Relative density: 2.21-2.23 at 20 °C |
| Relative vapour density: | Not applicable (sodium hydrogencarbonate is an inorganic salt) |
| Particle characteristics: | Particle size distribution studies were performed on 3 samples of sodium bicarbonate. Sample 1: MMD = 406 µm, D10 = 92 µm (SD = 1.3), D50 = 272 µm (SD = 3.2), D90 = 531 (SD = 12) Sample 2: MMD = 563 µm, D10 = 259 µm (SD = 4.9), D50 = 378 µm (SD = 2.7), D90 = 551 µm (SD = 8.4) Sample 3: MMD = 53 µm, D10 = 6.2 µm (SD = 0.009), D50 = 36 µm (SD = 0.053), D90 = 81 µm (SD = 0.18) |

| | | |
|---|--|------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 9/17 |

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Not applicable.

9.2.2. Other safety characteristics

In water solutions heavily corrosive for the majority of metals.

SECTION 10: Stability and reactivity

10.1. Reactivity

Under the conditions of storage and handling as intended - no reactivity. A hygroscopic substance.

10.2. Chemical stability

Under normal conditions of use and storage of the substance is stable. A hygroscopic substance. When heated over 50 °C the release of CO₂, H₂O and Na₂CO₃ resulting in total sodium hydrogencarbonate decomposition at 270 °C.

10.3. Possibility of hazardous reactions

Not specified.

10.4. Conditions to avoid

Temperature not higher than 35 °C, humidity below 30 % and above 70 % (substance may be lumpy).

Incompatible materials are listed in section 10.5.

10.5. Incompatible materials

Alkali metals, acids. It is corrosive to metals in the aqueous environment.

10.6. Hazardous decomposition products


When heated over 50 °C the release of CO₂, H₂O and Na₂CO₃ resulting in total sodium hydrogencarbonate decomposition at 270 °C.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity:

Based on available data, the classification criteria are not met.

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 10/17 |

Oral:

LD₅₀ (oral, rat) >4000 mg/kg b.w. (method according to EPA-FIFRA 40 CFR 160) (Glaza S.M., 1993)

Considering the history of human use of sodium hydrogencarbonate, the effects of oral exposure are well known due to accidental and intentional ingestion by humans, and it is considered safe to ingest up to 4 g/kg b.w.

Inhalation:

LC₅₀ (rat, *Sprague-Dawley*) >4,74 mg/l air (method according to EPA OTS 798.1150) (Wnorowski G., 1992)

Dermal:

According to point 8.5 of Annex VIII to REACH, the study does not need to be conducted as data are available for two other routes (oral and inhalation).

Skin corrosion/irritation:

Based on available data, the classification criteria are not met.

Based on the results of 2 studies on skin irritation in rabbits, conducted in accordance with OECD guidelines 404 (Henkel K., 1991) and EPA OTS 798.4470 (Wnorowski G., 1992), it was concluded that sodium bicarbonate is not irritating to rabbit skin.

The results of the irritant tests show that the substance must not be corrosive to the skin.

Serious eye damage/irritation:

Based on available data, the classification criteria are not met.

Based on the results of 2 studies on eye irritation in rabbits, conducted in accordance with OECD Guideline 405 (Henkel, 1991b) and EPA EPA OTS 798.4500 (Wnorowski G., 1992), sodium bicarbonate was not irritating to rabbit eyes.

Irritation test results show that the substance is unlikely to cause serious eye damage.

Respiratory or skin sensitization:

Based on available data, the classification criteria are not met.

Sodium hydrogencarbonate is considered not to have any sensitizing properties, based on the physiological role of both its constituent ions, as well as the fact that sensitizing effects of both sodium and hydrogencarbonate ions have never been reported, despite long-term historical and wide dispersive use (e.g.: human food, pharmaceutical, cosmetics and detergents).


Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

None of the mutagenicity tests were performed according to guidelines. However, all results were negative and more or less well documented. In accordance with point 1 of Annex XI of the REACH Regulation, testing does not appear scientifically necessary. Furthermore, sodium hydrogencarbonate is naturally present in cells and the structure does not indicate a genotoxic potential. Therefore, sodium bicarbonate is not considered to be genotoxic. Moreover, is the substance already present in the tissue culture media of the *in vitro* test systems for genetic toxicity testing, and needed for normal function of the cells in culture. Testing sodium hydrogencarbonate *in vitro* will affect the cellular homeostasis due to osmolarity.

Carcinogenicity:

Based on available data, the classification criteria are not met.

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 11/17 |

No carcinogenicity was found in a study in male rats of the Fischer 344 strain exposed to sodium bicarbonate (Fukushima S. *et al.*, 1989). There is no evidence of sodium hydrogencarbonate having carcinogenic effects.

Reproductive toxicity:

Based on available data, the classification criteria are not met.

Effects on fertility: No data on reproduction toxicity were available. According to point 1 of Annex XI to the REACH regulation, testing is not scientifically necessary as data are available showing that sodium bicarbonate is not toxic to reproduction. None of the routes of exposure relevant to workers or the general population will result in a true increase in systemic sodium and bicarbonate levels. Based on the normal physiological roles of sodium and bicarbonate, mammalian reproductive toxicity is not expected. In addition, sodium bicarbonate is used in cosmetic and pharmaceutical products and has been approved as a food additive in Europe.

Developmental toxicity: Sodium bicarbonate had no developmental effects after oral administration in 3 species (mice, rats, rabbits) and NOAELs were above the highest administered dose (FDA, 1974).

STOT-single exposure:

Based on available data, the classification criteria are not met.

STOT-repeated exposure:

Based on available data, the classification criteria are not met.

Adequate repeated dose toxicity studies are not available and therefore a NOAEL or LOAEL has not been determined. None of the repeated dose studies were done in the rat, the species recommended, and the relevance of the results for humans is limited due to the way in which the studies were done. However, in humans there is a long history of sodium hydrogencarbonate use as an antacid in doses up to 4 g without adverse effects of long-term use, although it is recommended not to use high doses of pure sodium hydrogencarbonate instead of antacids (Gosselin, 1976; McEvoy, 1994). In addition, sodium hydrogencarbonate is an important extracellular buffer in vertebrates and is therefore readily regulated in the body. Furthermore sodium hydrogencarbonate is used as a food additive and also as a feed material in the EU which confirms that the substance has a low repeated dose toxicity. The Joint FAO/WHO Expert Committee on Food Additives considered it not necessary to derive an Acceptable Daily Intake (ADI) for the food additive sodium hydrogencarbonate (JECFA, 1965).

Aspiration hazard:


Based on available data, the classification criteria are not met.

Health effects of exposure are given in section 4.2.

11.2 Information on other hazards

11.2.1. Endocrine disrupting properties

The substance has not been included in the list established in accordance with Article 59 (1) of the REACH Regulation as having endocrine disrupting properties. The substance does not meet the criteria for substances with endocrine disrupting properties as set out in

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 12/17 |

Commission Regulation (EU) 2017/2100 (OJ L 301, 17.11.2017) and Commission Regulation (EU) 2018/605 (OJ L 101, 20.4.2018 as amended).

SECTION 12: Ecological information

12.1. Toxicity

The lowest L(E)C₅₀ is >100 mg/l (48 h EC₅₀ study is 4100 mg/l for aquatic invertebrates (*Daphnia magna*)), and the lowest value for chronic toxicity is >0.1 mg/l (test 21 days NOEC is >576 mg/l for invertebrates (*Daphnia magna*)). Therefore, sodium bicarbonate should not be classified in accordance with Regulation (EC) No 1272/2008.

Acute toxicity to fish:

LC₅₀ (*Lepomis macrochirus*) 7100 mg/l/96h (method according to EPA OPP 72-1) (Machado, M.W., 1993)

NOEC (*Lepomis macrochirus*) 5200 mg/l/96h (method according to EPA OPP 72-1) (Machado, M.W., 1993)

Chronic toxicity to fish:

NOEC (*Pimephales promelas*) 400 mg/l/30d (method according to EPA PB85-227049) (Frag and Harper, 2014)

Acute toxicity to aquatic invertebrates:

LC₅₀ (*Daphnia magna*) 4100 mg/l/48h (method according to EPA OPP 72-2) (Putt, A.E., 1993)

NOEC (*Daphnia magna*) 3100 mg/l/48h (method according to EPA OPP 72-2) (Putt, A.E., 1993)

Chronic toxicity to aquatic invertebrates:

NOEC (*Daphnia magna*) >576 mg/l/21 days (Leblanc and Surprenant, 1984)

Algae and aquatic plants:

According to point 1 of Annex XI to the REACH regulation, the study does not need to be performed, because in the aqueous environment sodium bicarbonate is dissociated into sodium and bicarbonate ions. Both ions occur naturally in nature, their concentrations in surface waters depend on many factors: geological parameters, weather conditions and human activity. In addition, bicarbonate and sodium ions are present in high concentration in the algae medium, they are necessary for the growth of algae.


Two reliable studies (K2) of algae growth with the addition of NaHCO₃ are available.

NOEC (*Phaeodactylum tricornutum* and *Nannochloropsis salina*) of 5000 mg/l/12d (method according to Guillard RRL, Ryther JH (1962)) (Nunez *et al.* (2016))

NOEC (*Gracilaria lemaneiformis*, *Gracilaria vermiculophylla* and *Gracilaria chouae*) > 420 mg/l/14d (method according to Provasola L (1968)) (Zhou *et al.* (2016))

Toxicity to birds:

According to point 1 of Annex XI to the REACH regulation, the study does not need to be conducted because the absorption of sodium from exposure to sodium bicarbonate is much

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 13/17 |

lower than the absorption of sodium from food. Therefore, sodium bicarbonate is not expected to be systemically available in the body. In addition, oral intake of sodium bicarbonate causes the stomach to be neutralized by stomach acid. Sodium bicarbonate is an important extracellular buffer in vertebrates and is therefore easily regulated in the body.

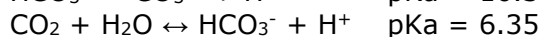
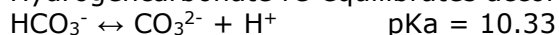
NOEC (Hy-Line Brown) (50wk): 3000 mg/kg feed/50w (according to the Experimental Animal Study Guidelines of the Ministry of Science and Technology, P.R. China) (Jiang *et al.*, 2015)

LOEC (Hy-Line Brown) (50wk): 3000 mg/kg feed/50w (according to the Experimental Animal Study Guideline of the Ministry of Science and Technology, P.R. China) (Jiang *et al.*, 2015)

12.2. Persistence and degradability

Sodium hydrogencarbonate is an inorganic substance, which cannot be oxidized or biodegraded by microorganisms.

In water, sodium hydrogencarbonate dissociates into sodium and hydrogencarbonate. Hydrogencarbonate re-equilibrates according to the following equations:



Only a small fraction of the dissolved CO_2 is present as H_2CO_3 , the major part is present as CO_2 . The amount of CO_2 in water is in equilibrium with the partial pressure of CO_2 in the atmosphere. The CO_2 / HCO_3^- / CO_3^{2-} equilibriums are the major buffer of the pH of freshwater.

Degradation

Hydrolysis:

In accordance with point 1 of Annex XI of the REACH Regulation, the study does not need to be conducted as in water, sodium hydrogencarbonate quickly dissociates.

Biodegradation:

In accordance with column 2 of Annex XI of the REACH Regulation, the ready biodegradability test, the simulation test on ultimate degradation in surface water, the sediment simulation test and the soil simulation test are not need to be conducted as the substance is inorganic.

12.3. Bioaccumulative potential


According to point 1 of Annex XI to the REACH regulation, the study does not need to be performed. When dissolved in water, sodium bicarbonate dissociates into sodium and bicarbonate ions. Both ions are ubiquitous in living organisms. Therefore, the bioaccumulation test has no added value and is considered scientifically unjustified.

Octanol-water partition coefficient (K_{ow}): Not applicable (sodium hydrogencarbonate is a salt of an inorganic).

Bioconcentration factor (BCF): Not applicable (sodium hydrogencarbonate is a salt of an inorganic).

12.4. Mobility in soil

If sodium bicarbonate is emitted to the soil, it may escape into the atmosphere as CO_2 (as noted above), precipitate as metal carbonate, form complexes or remain in solution. The high water solubility and low vapor pressure indicate that sodium bicarbonate is mainly found in aqueous media. Sodium bicarbonate is present in the environment as sodium and bicarbonate ions, which means that it does not adsorb on solid particles or surfaces and

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 14/17 |

does not accumulate in living tissues. Both sodium and bicarbonate ions have a wide natural occurrence.

12.5. Results of PBT and vPvB assessment

The PBT or vPvB criteria of Annex XIII to the Regulation 1907/2008/EC does not apply to inorganic substances.

12.6. Endocrine disrupting properties

The substance has not been included in the list established in accordance with Article 59 (1) of the REACH Regulation as having endocrine disrupting properties. The substance does not meet the criteria for substances with endocrine disrupting properties as set out in Commission Regulation (EU) 2017/2100 (OJ L 301, 17.11.2017) and Commission Regulation (EU) 2018/605 (OJ L 101, 20.4.2018 as amended).

12.7. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

During removal of waste comply with the regional / national laws.

Community legislation:

- Directive **2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008 as amended).
- European Parliament and Council Directive **94/62/EC** of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994 as amended).

Disposal methods for the product: Don't introduce into the environment. Collect spilt substance to the containers. Reused or pass in a properly labeled containers for disposal to the qualifying company.

Disposal methods for used packing: Don't introduce into the environment. Packaging disposed of as waste material, pass in a properly labeled containers for disposal to the qualifying company.


SECTION 14: Transport information

14.1. UN number or ID number

Not applicable.

14.2. UN proper shipping name

Not applicable.

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 15/17 |

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Substance is not dangerous for the environment in accordance with the UN Model Regulations criteria.

14.6. Special precautions for user

Not applicable.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006 as amended).

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008 as amended).

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (OJ L 203, 26.6.2022).


15.2. Chemical safety assessment

The Chemical Safety Report has been completed.

SECTION 16: Other information

Key to abbreviations and acronyms:

ADI - The acceptable daily intake.

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 16/17 |

b.w. - Body weight.

BLV - Biological limit values.

CAS Number - Each substance registered in the CAS Registry is assigned a CAS Registry Number. The CAS Registry Number is widely used as a unique identifier of chemical substances.

DNEL - Derived no-effect level.

EC Number - Inventory composed of three combined European lists of substances from the previous EU chemicals regulatory framework: EINECS, ELINCS and the NLP-list (no-longer polymers).

EC₂₀ - The effective concentration of substance that causes 20% of the maximum response.

EC₅₀ - The effective concentration of substance that causes 50% of the maximum response.

EFSA - The European Food Safety Authority.

EPA - The Environmental Protection Agency.

FDA - The United States Food and Drug Administration.

GLP - Good laboratory practice.

IMO - International Maritime Organization.

Index Number - The number assigned to the chemical substance in Annex VI of the CLP Regulation.

LC₅₀ - Median lethal concentration.

LD₅₀ - Lethal dose 50 %

LOEC - Lowest observed effect concentration.

MMD - Mass median diameters.

NOAEL - No observed adverse effect level.

NOEC - No observed effect concentration.

OECD - Organisation for Economic Cooperation and Development.

PBT - Persistent, bioaccumulative and toxic.

PNEC - Predicted no-effect concentration.

SD - Standard deviation.

STEL - Short-term exposure limit.

TWA - 8 hours time-weighted average.

vPvB - Very persistent and very bioaccumulative.


Sources of key data: Producer SDS from 10 November 2011 (actualization).
Sodium hydrogencarbonate REACH registration dossier (2022 update).

Training advice: Before use read the SDS.

The information above is based on a current available data concerning the product, but also on the experience and knowledge in this field of the producer. They are neither a quality description of the product nor a guarantee of particular features. They are also treated as aid to safety in transport, storage and usage of the product. This does not free the user from the responsibility of improper usage of the information above also of improper compliance with the law norms in the field.

The information contained in this SDS has been prepared by the manufacturer and verified by the ISOTOP s.c. Consulting Company from Gdansk; www.isotop.pl; e-mail: reach@isotop.pl

This SDS replaces and annuls all the previous versions.

| | | |
|---|--|-------------------|
|  | SAFETY DATA SHEET In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended | |
| | SODIUM HYDROGENCARBONATE | |
| Date: 01.07.2013 | Revision: 20.12.2022 | Page/pages: 17/17 |

Changes made in relation to the previous edition - sections: 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.