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1 Identification

GHS Product Identifier

SODIUM METABISULPHITE

Other means of identification

CAS:	7681-57-4
EC:	231-673-0
RTECS:	UX8225000
ICSC:	1461
NSC:	Not listed
EC Name:	Disodium disulphite
Chemical Family:	Sulfite
Synonyms:	Na(2)S(2)O(5) sodium disulfite sodium metabisulfite sodium metabisulfite, 35S2-labeled cpd sodium pyrosulfite
Proper Shipping Name:	Not regulated for transport
Molecular Weight:	190.095 g/mol
Chemical Formula:	Na2S2O5

Recommended use of the chemical and restriction on use

1. Food additives
2. For sodium metabisulfite (USEPA/OPP Pesticide Code: 111409) ACTIVE products with label matches. Registered for use in the U.S. but approved pesticide uses may change periodically and so federal, state and local authorities must be consulted for currently approved uses.
3. Sodium Metabisulfite functions as reducing agents in cosmetic formulations. Sodium Bisulfite, and Sodium Metabisulfite also function as antioxidants.
4. In foods, as preservative; lab reagent
5. Sulfiting agents are used primarily to reduce or prevent spoilage and discoloration as well as to bleach food starches, condition dough for some baked goods, control fermentation of wine, and soften corn kernels during the wet-milling process.
6. In photography as a reductant, and as a preservative for thiosulfate fixing baths. Used to reduce chlorine in industrial process water and wastewater. In the textile industry .. used as a bleach especially for wool; as an antichlor after bleaching of nylon, for reducing vat dyes; in rendering certain other dyes soluble
7. Free-flowing powder applied to fresh grass silage; for production of sulfur dioxide in place of employing gas directly. Sulfur dioxide develops sufficient acidity quickly for proper preservation whereas natural fermentation would take too long.
8. Silage preservative
9. Sodium metabissulfite is used as an antioxidant in oral, parenteral, and topical pharmaceutical formulations, at concentrations of 0.01 -1.0 % w/v, and at a concentration of approximattely 27% w/v in intramuscular injection preparations. Primarily, sodium metabisulfite is used in acidic preparations. Sodium metabisulfite also has some antimicrobial activity, which is greatest at acid pH, and may be used as a presevative in oral preparations such as syrups.
10. Grape, postharvest/ used as fungicide and preservative. An antioxidant in hair care products and as a reducing agent in cosmetic formulations

11. Medication.

Supplier's details

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2 Hazard(s) identification

Classification of the substance or mixture

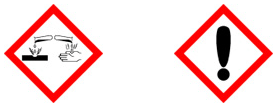
Classification according to Regulation (EC) No 1272/2008

Acute Toxicity - Oral (Category 4), H302
Serious Eye Damage/Eye Irritation (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS label elements

Danger



Harmful if swallowed

Causes serious eye damage

Wash thoroughly after handling.

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

Wear protective gloves/protective clothing/eye protection/face protection.

IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.

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.

Rinse mouth.

Dispose of contents and container in accordance with local, regional, national, international regulations.

Other hazards which do not result in classification

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

EUH031: Contact with acids liberates toxic gas.

3 Composition/information on ingredients

Description	CAS Number	EINECS Number	%	Note
Sodium Metabisulfite	7681-57-4	231-673-0	99	Acute Tox. (Cat 4) H302, Serious Eye Damage/Eye Irritation (Cat 1) H318

4 First-aid measures

Description of necessary first-aid measures

General information
Move victim out of danger zone. Position and transport victim on their side. In case of respiratory distress, bring into semi-upright, seated position. Remove contaminated clothing immediatley and dispose off safely. Put victim at rest, cover with a blanket and keep warm. Do not leave victim unattended. In case of accident or if you feel unwell, seek medical advice immediately (show safety data sheet if possible). Immediately get medical attention.

In case of inhalation
Provide fresh air. In case of breathing difficulties administer oxygen. No mouth-tomouth or mouth-to-nose resuscitation. Use respiratory bag or oxygen resuscitation apparatus.

In case of skin contact
Remove contaminated clothing immediatley and dispose off safely. After contact with skin, wash immediately with plenty of water.

In case of eye contact
If product gets into the eye, keep eyelid open and rinse immediately with large quantities of water, for at least 5 minutes. Subsequently consult an ophthalmologist. Protect the eye that is not injured.

In case of ingestion
Rinse mouth immediately and drink large quantities of water. **DO NOT** induce vomiting.

Self-protection of the first aider
First aid assistant: Pay attention to self-protection!

Most important symptoms/effects, acute and delayed

Inhalation
Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. May cause allergic reaction in sensitive individuals.

Ingestion
May cause gastric irritation by the liberation of sulfurous acid. An asthmatic reaction may occur after ingestion. Large doses may result in nausea, vomiting, diarrhea, abdominal pains, circulatory disturbance, and central nervous system depression. Estimated fatal dose is 10 gm.

Skin Contact
Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact
Causes irritation, redness, and pain. Contact may cause irreversible eye damage. Symptoms may include stinging, tearing, redness, swelling, corneal damage and blindness.

Chronic Exposure
No information found.

Aggravation of Pre-existing Conditions
Some individuals are said to be dangerously sensitive to minute amounts of sulfites in foods. Symptoms may include broncho constriction, shock, gastrointestinal disturbances, angio edema, flushing, and tingling sensations. Once allergy develops, future exposures can cause asthma attacks with shortness of breath, wheezing, and cough.

Indication of immediate medical attention and special treatment needed, if necessary

Information to physician
Routes of exposure: The substance can be absorbed into the body by inhalation and by ingestion.
Hazards: Repeated or prolonged inhalation exposure may cause asthma. Exposure may cause allergic reaction, asthma or dyspnea (short-term exposure).
Symptoms: Cough, shortness of breath, sore throat and laboured breathing (in case of inhalation). Redness and pain (incase of eye contact). Abdominal pain, diarrhoea, nausea and vomiting (in case of ingestion).

5 Fire-fighting measures

Suitable extinguishing media

Suitable extinguishing media
Water, Foam, Carbon dioxide (CO_2), Extinguishing powder.

Extinguishing media which must not be used for safety reasons
None special.

Specific hazards arising from the chemical

In case of fire may be liberated: Sulphur oxides.

Special protective actions for fire-fighters

Special protective equipment for fire-fighters
Wear full chemical protective clothing. In case of fire: Wear self-contained breathing apparatus

Additional information
Intervention Actions-General:
Keep upwind. Put on protective equipment before entering danger area.
Intervention Actions-Fire (involving the substance):
Gives off toxic and irritant fumes when heated or burning. Heating of container(s) may cause pressure rise with risk of bursting. Keep container(s) cool with water. Extinguish with water jet. Use water spray to knock down fire fumes if possible. **Avoid** unnecessary run-off of extinguishing media which may cause pollution.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personnel protection
Wear appropriate chemical protective gloves, boots and goggles. If contact with the material anticipated, wear appropriate chemical protective clothing.

Avoid breathing vapors. Keep upwind. **Avoid** bodily contact with the material. Wash away any material which may have contacted the body with copious amounts of water or soap and water. If contact with the material anticipated, wear appropriate chemical protective clothing. **Avoid** breathing fumes from burning material.

Excerpt from ERG Guide 154 [Substances - Toxic and/or Corrosive (Non-Combustible)]:
As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

SPILL:
Increase, in the downwind direction, as necessary, the isolation distance shown above.
FIRE:
If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2016)

Personal precautions (spillage)
Wear personal protection equipment.

Environmental precautions

Water spill
Use natural barriers or oil spill control booms to limit spill travel. Use natural deep water pockets, excavated lagoons, or sand bags barriers to trap material at bottom. Remove trapped material with suction hoses.

Land spill
Dig a pit, pond, lagoon, holding area to contain liquid or solid material. Cover solids with plastic sheet to prevent dissolving in rain or fire fighting water. Dike surface flow using soil, sand bags, foamed polyurethane, or foamed concrete.

If material is not involved in a fire
Keep material out of water sources and sewers. Build dikes to contain flow as necessary. **DO NOT** use water on material itself.

Methods and materials for containment and cleaning up

Remove mechanically, placing in appropriate containers for disposal. Take up dust-free and set down dust-free. **Avoid** contact with water.

7 Handling and storage

Precautions for safe handling

Advices on safe handling

Protective measures:
Wear personal protection equipment. **DO NOT** eat, drink, smoke or sneeze at the workplace. Dangerous areas must be delimited and marked with appropriate warning and safety signs. In the immediate working surroundings there must be: Emergency spray installed. provide eye wash and label its location conspicuously. Provide sufficient washing facilities. Fill only into labelled container. Instruction on the hazards and the protective measures using instruction manual are required with signature. Working areas must be arranged in such a manner that they can be cleaned at all times.

Technical measures:
Measures to prevent aerosol and dust generation: It is recommende to design all work processes always so that the following is excluded: Inhalation. Skin contact. Eye contact. If handled uncovered, arrangements with local exhaust ventilation should be used if possible.

Measures required to protect the environment:
Cover drains. **DO NOT** allow to enter into soil/subsoil. **DO NOT** empty into drains or the aquatic environment.

Specific requirements or handling rules:
The floor should be leak tight, jointless and not absorbent.

Precautions against fire and explosion:
Usual measures for fire prevention.

Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:
Keep container tightly closed. Keep/Store only in original container. Protect against: Humidity. UV-radiation/sunlight.

Hints on storage assembly:
Keep away from food, drink and animal feedingstuffs.

Further information on storage conditions:
Storage class 10-13
Storage temperature 10-27°C
Relative air humidity: 10-55%
Maximum period of storage: 2 years

8 Exposure controls/personal protection

Control parameters

Exposure limit values

Occupational exposure limit value (sulphur dioxide - 7446-09-5):
AGW (Germany): 0.5 ppm; 1.3 mg/m³ (long term).
AGW (Germany): 0.5 ppm (STV 15 minutes average value; a momentary value of 1 mL/m³ (2.7 mg/m³) should not be exceeded); 1.3 mg/m³ (short term).
Belgium and Spain: 2 ppm; 5.3 mg/m³ (long term).
Belgium and Spain: 5 ppm; 13 mg/m³ (short term).
France: 2 ppm; 5 mg/m³ (long term).
France: 5 ppm; 10 mg/m³ (short term).
Netherlands: 0.7 mg/m³ (short term).
United States: 5 ppm; 13 mg/m³ (long term).

Threshold Limit Values

ACGIH

8 hr Time Weighted Avg (TWA): 5 mg/cu m.

Excursion Limit Recommendation
Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded.

A4: Not classifiable as a human carcinogen.

5 mg/m3, as TWA; A4 (not classifiable as a human carcinogen)

Appropriate engineering controls

Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA limits (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at the source.

Individual protection measures

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors. Recommendations below is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye/face protection:
Safety glasses or safety goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU). Contact lenses should not be worn as they may contribute to severe eye injury.

Skin protection
Use protective gloves.
The glove material must be sufficiently impermeable and resistant to the substance.
Check the tightness before wear.
Gloves should be well cleaned before being removed, then stored in a well ventilated location.
Pay attention to skin care.
Textile or leather gloves are completely unsuitable.
The following information is valid for aqueous, saturated solutions of the substance.
Suitable materials for gloves are (brakthrough time>=8 hours): CR (polychloroprenes, Chloroprene rubber) - CR (0,5 mm); NBR (Nitrile rubber)- NBR (0,35 mm); Butyl rubber - Butyl (0,5 mm); FKM (fluororubber) - FKM (0,4 mm).
The times listed are suggested by measurements taken at 22°C and constant contact.
Temperatures raised by warmed substances, body heat, etc. and a weakening of the effective layer thickness caused by expansion can lead to a significantly shorter breakthrough time. In case of doubt contact the gloves' manufacturer. A 1.5-times increase / decrease in the layer thickness doubles / halves the breakthrough time.

This data only applies to the pure substance. Transferred to mixtures of substances, these figures should only be taken as an aid to orientation.

Body Protection
Suitable protection of the body: Chemical resistant safety shoes. Protective clothing: DIN EN 13034

Respiratory protection
Respiratory protection required in case of: Handling larger quantities exceeding critical value.
Suitable respiratory protective equipment: Combination filtering device (DIN EN 141).
Type of mask: Half-face mask (DIN EN 140).
Filtering device: E-P2 or E-P3

General health and safety measures

When using do not eat, drink, smoke, sneeze. Wash hands and face before breaks and after work and take a shower if necessary. Draw up skin protection programme. Used working clothes must not be worn outside the working area. Separate storage of work clothes. Immediately remove any contaminated clothing, shoes or stockings. In the immediate working surroundings there must be: Emergency shower installed.
Make available sufficient washing facilities. Provide eye shower and label its location conspicuously. Set out skin protection guidelines. Only wear fitting, comfortable and clean protective clothing.

9 Physical and chemical properties

Physical and chemical properties

Appearance (physical state, colour etc):	White hexagonal crystals or powder
Odour:	slight sulfur odour
Odour threshold:	No additional data
pH:	4,0 - 5,5 (10 % aqueous solution)
Melting/Freezing Point:	greater than 150 °C
Initial boiling point and boiling range:	Decomposes
Flash point:	No additional data
Evaporation rate:	No additional data
Surface tension at 20°C:	100 mg/L = 55.9 nM/m 500 mg/L = 49.5 nM/m 1000 mg/L = 48.0 nM/m
Flammability (solid, gas):	non flammable solid
Upper/lower flammability or explosive limits:	Has no explosive properties
Vapour pressure:	Not applicable
Vapour density:	Not applicable
Relative density:	2.4
Solubility(ies):	667 g/L at 25°C (very soluble, reliable handbook data)
Solubility in organic solvents:	<0.01 g/L for five tested solvents (toluene, dichloromethane, n-hexane, acetone, ethyl acetate); for the methanol, a solubility plateau is reached at 62 g/L after overnight shaking
Partition coefficient: n-octanol/water:	LogP -3.7
Auto-ignition temperature:	No additional data
Decomposition temperature:	> 150 °C
Viscosity:	Not applicable
Particle size distribution and dustiness of a representative sample (experimental study results):	D50 = 66.8 µm D10 = 9.4 µm D90 = 238.5 µm
Dustiness:	18.55 mg/g, MMAD (GSD): 23.11 µm (2.15)

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10 Stability and reactivity

Reactivity

Acts as a corrosive acid when mixed with water. Reacts slowly with air and water.

Reactive Group
Sulfite and Thiosulfate Salts

Reactivity Alerts
Strong Reducing Agent

Reactivity Profile
SODIUM METABISULFITE is incompatible with the following: Heat (decomposes) [Note: Slowly oxidized to the sulfate on

exposure to air & moisture.] (NIOSH, 2016).

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.

Conditions to avoid

In case of warming: Danger of bursting container. Thermal decomposition can lead to the escape of irritating gases and vapours.

Incompatible materials

Separated from acids and strong oxidants.

Hazardous decomposition products

Sulphur dioxide: gas/vapours, irritant.

11 Toxicological information

Toxicological (health) effects

Toxicokinetics, metabolism and distribution
Short description of key information on bioaccumulation potential result:
Sulfites, hydrogensulfites and metabisulfites are present in dissociated form in aqueous solutions, depending on solution pH. Dithionites disproportionate in water to form hydrogen sulfites and thiosulfates. Thiosulfates also disproportionate in acidic aqueous solution to form polythionic acids and SO_2 (HSO_3-). For these reasons, extensive read-across between these substances is considered justified.
Inhalation absorption: based on particle size dependant deposition modelling (MPPDl), an inhalation absorption factor of 56.0% was derived for sodium metabisulfite.

Dermal absorption: in the absence of measured data on dermal absorption, dermal absorption factors of 1% (exposure to liquid media) and 0.1% (exposure to dry solids/dust) are assumed (HERAG).

Oral absorption: according to animal toxicokinetic data (70-95% absorption), an oral absorption factor of 100% was derived.
Metabolism: inorganic substances such as sulfites are not subject to metabolism as such; however, these substances are known to undergo oxidative transformation under physiological circumstances.

Distribution and elimination: upon systemic uptakey, sulfites are distributed widely between tissues because of their high solubility/bioavailability, and are cleared almost exclusively by oxidation to sulfate with subsequent renal excretion.
Short description of key information on absorption rate:
Measured data on the dermal absorption of the substances are not available. In the absence of such data, the assignment of default absorption factors of 1% (from exposure to liquid/wet media) and 0.1% (from exposure to dry dust/solids) respectively is considered appropriate, as outlined in the methodology proposed in HERAG guidance for metals and their inorganic substances (HERAG, 2007).

Basic toxicokinetics
Interpretation of results (migrated information): other:
Sulfite is readily absorbed from the digestive tract of rats.The studies in rats showed that very little, if any, ingested SO_2 is eliminated by exhalation.

Acute toxicity
According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is classified as harmful via the oral route.
According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is classified as Category 4.

Acute toxicity: inhalation & dermal
According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is not classified as acute toxic via the inhalation and dermal route.

According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is not classified as acute toxic via the inhalation & dermal route.

Skin corrosion/irritation
In total six reliable in-vivo studies for skin irritation were identified that are considered adequate (read-across) information and thus rated as key studies. The tests on skin irritation show a negative response, thus, based on read-across, sodium metabisulfite does not require classification as skin irritant.

Sodium sulphite is not an skin irritant.
According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is not classified as skin irritant.
According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is not classified as skin irritant.

Eye irritation
One in-vivo study on eye irritation for sodium metabisulfite is available. The results of the eye irritation study indicate clear eye irritation properties for the substance sodium metabisulfite. According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is classified as as a serious eye irritant (Xi, R41). According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is classified as a serious eye irritant (Eye Dam.1, H318).

According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is classified as irritating (Classification: risk of serious damage to eyes).
According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is as Category 1.

Skin Sensitisation
The reference Haferkorn (2010) is considered as the key study on skin sensitisation and will be used for classification. The overall sensitisation results in this Local lymph node assay (LLNA) in mice are as follows: SIs of less than 1.4 (0.854 - 0.970) were observed for lymph node cell count at all test concentrations of disodium disulfite (10, 25, 50 %) and no dose response could be observed. In addition, SIs of less than 1.1 (0.934 - 1.086) were observed for ear weight at all concentrations of disodium disulfite (10, 25, 50 %). Thus, the classification criteria acc. to Directive 67/548/EEC and Regulation (EC) 1272/2008as skin sensitizer are not met and disodium disulfite has not being labelled as such.

In the corresponding OECD SIDS (2001), a guinea pig maximisation assay yielded a sensitisation rate of 0/10 animals. Thus, the classification criteria acc. to Directive 67/548/EEC and Regulation (EC) 1272/2008as skin sensitizer are not met in this case either.
Reported human incidences of sulfite sensitivity have been reviewed extensively by various scientific and regulatory bodies in the EU, concluding on an absence of sensitising effects.

Respiratory sensitisation
There is no evidence on specific respiratory hypersensitivity in humans following repeated inhalation exposure with disodium disulfite. Furthermore, none of the repeated dose toxicity studies via inhalation reports respiratory hypersensitivity in the test animals. Thus, the classification criteria acc. to Directive 67/548/EEC and Regulation (EC) 1272/2008 as respiratory sensitizer are not met.

Repeated dose toxicity, oral
Local effects in the stomach were the most predominant finding of repeated dose toxicity: The NOAEL for local chronic effects in the study described by Til et al. (1972) is represented by the dose of 0.25% metabisulfite. The corrected dose level corresponded to a dose of 108 mg/kg bw/d $Na_2S_2O_5$. All observed effects (occurrence of occult blood in faeces and changes in gastric morphology) were detected at higher dose levels at and above 0.5% in the diet (220 mg/kg bw/d $Na_2S_2O_5$). There was no evidence of systemic toxicity following chronic treatment with sodium metabisulfite. Therefore, the NOAEL for systemic effects can be expected above the highest dose of 2% metabisulfite in the diet corresponding to 955 mg/kg bw/d of $Na_2S_2O_5$.

Therefore, it can be concluded that based on the available animal data, $Na_2S_2O_5$ does not have the potential to produce significant toxicity, or to be harmful to humans, following repeated exposure at low or moderate exposure concentrations relevant for classification. This result can be read across to sodium sulfite without restriction. Thus, the requirements for STOT-RE classification criteria according to regulation (EC) 1272/2008 as specific target organ toxicant (STOT) – repeated exposure, oral are not met, and no classification as specific target organ toxicant is required.

Repeated dose toxicity, dermal
(i) Based on physico-chemical properties of disodium disulfite and the toxicokinetic behaviour (very limited penetration into the upper epithelial layers of the epidermis,) there are no systemic risks to humans with respect to dermal exposure to this substance.
(ii) One may assume a conservative default of 1% for dermal absorption of disodium disulfite, leading to the anticipation of a negligible toxicity via the dermal route.

Thus, it may be concluded that there will be no systemic risks to humans with respect to dermal exposure to disodium disulfite, and no classification for specific target organ toxicant (STOT) – repeated exposure, dermal according to regulation (EC) 1272/2008 is required for this substance or any suitable compound for read-across to this compound.

Repeated dose toxicity, inhalation
According to regulation (EC) 1272/2008, a classification for specific target organ toxicity – repeated exposure shall be taken into account only when reliable evidence associating repeated exposure to the substance with a consistent and identifiable toxic effect demonstrates support for the classification. However, there is no data or information available to evaluate a potential for specific organ toxicity following repeated inhalation exposure, and thus classification is not required.

Genetic toxicity
According to regulation (EC) 1272/2008 (CLP), as amended, substances shall be classified for the endpoint germ cell mutagenicity, in case they may cause mutations in the germ cells of humans that can be transmitted to the progeny. The classification shall be based on the total weight of evidence available, using expert judgement and the relevance of the route of exposure used in the study of the substance compared to the most likely route of human exposure shall also be taken into account.

The available data on genetic toxicity allow a conclusive statement on the genetic toxicity for sulfites.

Irrespective of the reporting quality of the publications, both positive and negative findings are reported in in vitro as well as in vivo test systems.

There was no evidence whatsoever for any mutagenic activity of sulfites in the bacterial reverse mutation test or the mouse lymphoma assay, up to the maximum concentration limited by cytotoxicity. Consequently sulfites are considered non-mutagenic in suitable in vitro test systems.
Following rigorous relevance and reliability screening, it can be concluded that sulfites do not show any clastogenic potential. A high-quality in vivo study with sodium sulfite via subcutaneous injection in mice did not show an increase of micronuclei formation up to the maximum tolerated dose. This finding is supported by a negative dominant lethal test in rats after single and repeated oral administration (feed) in rats. A number of in vivo clastogenicity studies were assessed as being of limited reliability, since these exhibit reporting and/or other experimental deficiencies and lack biological plausibility.

Overall, there is no consistent evidence of induction of genetic toxicity with relevance to humans for sulfites. Therefore, the classification criteria as laid down in regulation (EC) 1272/2008 are not met and sulfites are not to be classified as germ cell mutagen.

Carcinogenicity
The available data on long-term oral exposure of experimental animals to sodium and potassium metabisulphite allow an evaluation of the carcinogenic risks of sulphite compounds for humans exposed via the oral route. There was no indication that metabisulphite had any carcinogenic effect itself.

Taking into account the applicability of the read-across approach for the different sulphites, the carcinogenity assessment of the sulphites and hydrogensulphites (group 1), sodium dithionite (group 3), and thiosulphates (group 4) can be based on the negative findings of the above mentioned study on potassium metabisulphite (read-across group 2) in mice.

No classification of the substance as carcinogenic substance is required.

Toxicity to reproduction
All available animal data did not show any evidence of effects on fertility, toxicity to reproduction, developmental toxicity or teratogenicity of sodium metabisulfite or any similar substance within the read-across concept for the group of sulfite substances. Thus, based on the lack of any effects on reproductive performance and organs, the reproductive tract is not

considered to represent a target organ of toxicity.

Therefore the requirements according to regulation (EC) 1272/2008 for classification for the hazard class Reproductive Toxicity are not fulfilled and classification is not required for sodium sulfite and any other of the sulfite substances.

Information on the likely routes of exposure

Workers - Hazard via inhalation route

Systemic effects

Long term exposure

Hazard assessment conclusion:	DNEL (Derived No Effect Level)
Value:	225 mg/m³
Most sensitive endpoint:	repeated dose toxicity

Acute/short term exposure

DNEL related information

Local effects

Long term exposure

Hazard assessment conclusion:	no-threshold effect and/or no dose-response information available

Acute/short term exposure

DNEL related information

Workers - Hazard via dermal route

Systemic effects

Acute/short term exposure

DNEL related information

Workers - Hazard for the eyes

Additional information - workers

Read-across concept for sulfites, hydrogensulfites, metabisulfites, dithionites and thiosulfates:
The basis for the read-across concept for this project is the equilibrium between sulfites, hydrogensulfites, and metabisulfites in aqueous solutions depending on pHvalue which is clearly described in published literature and summarised in the following equations:[1],[2]

SO2+ H2O <->`H2SO3´ H2SO3<->H++ HSO3-<->2H++SO32- 2HSO3-<->H2O +S2O52-

As the nature of the cation should make no significant difference in this case concerning toxicity and solubility (all compounds are very soluble in water), only the chemical and biological properties of the anion are considered relevant. Based on the described equilibrium correlations, we propose unrestricted read-across between the groups of sulfites, hydrogensulfites and metabisulfites.

Additionally, it is known that sodium dithionite disproportionates in water to form sodium hydrogen sulfite and sodium thiosulfate (equation II) so that this substance can also be added to the read-across concept.[2],[1]It is expected for this case that the substance is not stable enough under physiological conditions to fulfil the requirements of study guidelines and so the products of decomposition have to be considered.

2 S2O42-+ H2O→2HSO3-+ S2O32 -

Not completely included in this read-across concept is the substance class of thiosulfates. Although thiosulfates may also disproportionate in aqueous solution to form polythionic acids and SO2(HSO3-), the required conditions are somewhat different (more acidic) and are therefore not strictly comparable with physiological conditions, except for the case of oral application where read-across should be considered unrestricted due to the strongly acidic conditions in the stomach:

HS2O3-+ H2S2O3→HS3O3- + SO2+ H2O

Nevertheless, read-across for all other routes (dermal, inhalation) should also be considered.
The proposed read-across concept only applies to toxicological and ecotoxicological/environmental fate endpoints.
[1]Hollemann Wiberg, Lehrbuch der Anorganischen Chemie, 101.Auflage
[2]Handbook of Chemistry and Physics, Ed. Lide, DR, 88thedition, CRC Press

Route-to-route extrapolation

According to regulation (EC) 1907/2006 Annex XI (weight of evidence), testing for sub-chronic inhalation toxicity is not

considered to be required. In accordance with ECHA guidance on information requirements and chemical safety assessment-chapter R.8: characterisation of dose [concentration]-response for human health, May 2008, a DNEL for systemic effects could be derived by route-to-route extrapolation from a 90-day oral toxicity study in rats with sodium metabisulfite.

General Population - Hazard via inhalation route

Systemic effects

Long term exposure

Hazard assessment conclusion:	DNEL (Derived No Effect Level)
Value:	66 mg/m³
Most sensitive endpoint:	repeated dose toxicity

Acute/short term exposure

DNEL related information

Local effects

Long term exposure

Hazard assessment conclusion:	no-threshold effect and/or no dose-response information available

Acute/short term exposure

DNEL related information

General Population - Hazard via dermal route

Systemic effects

Acute/short term exposure

DNEL related information

General Population - Hazard via oral route

Systemic effects

Long term exposure

Hazard assessment conclusion:	DNEL (Derived No Effect Level)
Value:	8.6 mg/kg bw/day
Most sensitive endpoint:	repeated dose toxicity

Acute/short term exposure

DNEL related information

General Population - Hazard for the eyes

Additional information - General Population

Read-across concept for sulfites, hydrogensulfites, metabisulfites, dithionites and thiosulfates:
The basis for the read-across concept for this project is the equilibrium between sulfites, hydrogensulfites, and metabisulfites in aqueous solutions depending on pHvalue which is clearly described in published literature and summarised in the following equations:[1],[2]

SO2+ H2O <->`H2SO3´ H2SO3<->H++ HSO3-<->2H++SO32- 2HSO3-<->H2O +S2O52-

As the nature of the cation should make no significant difference in this case concerning toxicity and solubility (all compounds are very soluble in water), only the chemical and biological properties of the anion are considered relevant. Based on the described equilibrium correlations, we propose unrestricted read-across between the groups of sulfites, hydrogensulfites and metabisulfites.

Additionally, it is known that sodium dithionite disproportionates in water to form sodium hydrogen sulfite and sodium thiosulfate (equation II) so that this substance can also be added to the read-across concept.[2],[1]It is expected for this case that the substance is not stable enough under physiological conditions to fulfil the requirements of study guidelines and so the products of decomposition have to be considered.

2 S2O42-+ H2O→2HSO3-+ S2O32 -

Not completely included in this read-across concept is the substance class of thiosulfates. Although thiosulfates may also disproportionate in aqueous solution to form polythionic acids and SO2(HSO3-), the required conditions are somewhat different (more acidic) and are therefore not strictly comparable with physiological conditions, except for the case of oral application where read-across should be considered unrestricted due to the strongly acidic conditions in the stomach:

HS2O3-+ H2S2O3→HS3O3- + SO2+ H2O

Nevertheless, read-across for all other routes (dermal, inhalation) should also be considered.
The proposed read-across concept only applies to toxicological and ecotoxicological/environmental fate endpoints.
[1]Hollemann Wiberg, Lehrbuch der Anorganischen Chemie, 101.Auflage
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Route-to-route extrapolation
According to regulation (EC) 1907/2006 Annex XI (weight of evidence), testing for sub-chronic inhalation toxicity is not considered to be required. In accordance with ECHA guidance on information requirements and chemical safety assessment-chapter R.8: characterisation of dose [concentration]-response for human health, May 2008, a DNEL for systemic effects could be derived by route-to-route extrapolation from a 90-day oral toxicity study in rats with sodium metabisulfite.

Symptoms related to the physical, chemical and toxicological characteristics

Ingestion may result in gastric irritation, owing to the liberation of sulfurous acid, while ingestion of large amounts of sodium metabisulfite can cause colic, diarrhea, circulatory disturbances, CNS depression, and death.

Inhalation of sodium metabisulfite causes mucous membrane irritation, coughing and oppression. There is no irritant effect on skin, but an irritating effect on eyes. Ingestion causes irritation of the mucous membranes of oral cavity, throat, esophagus, stomach and bowels.

Delayed and immediate effects and also chronic effects from short and long term exposure

Prolonged or repeated exposure may cause dermatitis, and sensitization reactions. Exposure to asthmatic, atopic and sulfite sensitive individuals can result in expiratory volume. Decomposition of sodium metabisulfite and solutions may release toxic and hazardous fumes of sulfur oxides, including sulfur dioxide, which may cause permanent pulmonary impairments from acute and chronic exposure. The Immediately Dangerous to Life or Health (IDLH) level for SO_2 is 100 ppm.

Numerical measures of toxicity (such as acute toxicity estimates)

Acute toxicity: via oral route
Dose descriptor: LD_{50} 1 540 mg/kg bw

According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is classified as harmful via the oral route.
According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is classified as Category 4.

Acute toxicity: inhalation
According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is not classified as acute toxic via the inhalation route.
According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is not classified as acute toxic via the inhalation route.

Acute toxicity: dermal
Under the conditions of this study the acute dermal median lethal dose (LD_{50}) of Natriumsulfit wasserfrei food grade (E221) / (PRD 30042389) after dermal application was found to be greater than 2000 mg/kg body weight in male and female rats.

According to the criteria specified by Directive 67/548/EEC and subsequent regulations, the test item is not classified as acute toxic via the dermal route.
According to the EC Regulation No. 1272/2008 and subsequent regulations, the test item is not classified as acute toxic via the dermal route.

Interactive effects

Sodium metabisulfite ($Na_2S_2O_5$) is used as an antioxidant and antimicrobial agent in a variety of drugs and functions as a preservative in many food preparations. In addition to their antioxidant activity, sulfites oxidize to sulfite radicals (SO3-) initiating lipid peroxidation. This study was performed to elucidate the effect of subchronic $Na_2S_2O_5$ (520 mg/kg/day) ingestion on hepatic and renal antioxidant enzyme activities and lipid peroxidation in albino rats. The antioxidant effect of L-carnitine was also tested in rats treated with $Na_2S_2O_5$. Plasma uric acid levels were monitored in all rats included in the study. Malondialdehyde (MDA) levels significantly increased in $Na_2S_2O_5$ treated rats vs. controls, with kidney values of 2.21+/-0.21 vs. 1.22+/-0.35 and liver values of 79.85+/-19.5 vs. 31.36+/-5.0 nmol/mg protein, respectively. Selenium-

glutathione peroxidase (GPx) activity was significantly increased in $Na_2S_2O_5$ treated rats vs. controls, with kidney values of 38.22+/-2.21 vs. 8.09+/-0.76 and liver values of 31.11+/-6.37 vs. 11.70+/-1.02 U/g protein, respectively. Sodium metabisulfite treatment increased plasma uric acid levels in rats that were included in the study. No protective effect of L-carnitine was observed against lipid peroxidation in both liver and kidneys of rats treated with $Na_2S_2O_5$. The presented data confirm the prooxidant activity of sulfites and suggest that increased GPx activity and plasma uric acid levels may partially reduce the observed renal and hepatocellular oxidative damage caused via the ingestion of sulfites.

Sodium metabisulfite is incompatible with chloramphenicol owing to a more complex reaction. Sodium metabisulfite also inactivates cisplatin in solution.

Sodium metabisulfite reacts with sympathomimetics and other drugs that are ortho- or para-hydroxybenzyl alcohol derivatives to form sulfonic acid derivatives possessing little or no pharmacological activity. The most important drugs subject to this inactivation are epinephrine (adrenaline) and its derivatives.

The aim of the present experiment was to test the effects of a wet preservation of triticale contaminated mainly with deoxynivalenol (DON) with sodium metabisulphite ($Na_2S_2O_5$, SBS) on growth performance, liver function, clinical-chemical plasma parameters and organ histopathology of piglets. For this purpose both the uncontaminated control triticale and the DON contaminated triticale were included in the piglet diet either untreated (CON, FUS) or SBS-treated (CON-SBS, FUS-SBS) and fed for 28 d starting from weaning. The dietary concentrations of DON and DON sulfonate (DONS), the DON derivative resulting from the SBS treatment, amounted to 0.156, 0.084, 2.312 and 0.275 mg DON per kg CON, CON-SBS, FUS and FUS-SBS diet, and to <0.05, <0.05, <0.05 and 1.841 mg/kg diet, respectively. Feeding the FUS diet significantly reduced the feed intake compared to the other three groups as indicated by the significant interactions between triticale source and SBS treatment when the whole experimental period of 28 d was considered (p = 0.014) while live weight gain and feed to gain ratio remained unaffected. The total plasma protein concentration was significantly depressed due to feeding the contaminated diets whereas SBS treatment exerted an increasing effect at the same time (45.4, 49.5, 40.7 and 46.5 g/L for piglets fed the CON, CON-SBS, FUS and FUS-SBS diet, respectively). The liver function was tested by the (13)C-methacetin breath test (MBT) allowing evaluation of the cytochrome P4501A2 activity. MBT results, expressed as cumulative percentage dose recovery after 360 min (cPDR360) revealed a slight stimulation of liver function due to SBS treatment (p = 0.052) (37.5, 39.4, 37.4 and 55.1% for piglets fed the CON, CON-SBS, FUS and FUS-SBS diet, respectively). Liver weight and histopathological scoring were only weakly related to the MBT results. Further histopathological examinations of kidneys, pancreas and heart revealed no treatment effects. It was concluded that the SBS treatment of the contaminated triticale restored the performance of piglets to the level of the piglets fed the control diet while the effects on liver function, clinical-chemical plasma parameters - excepting the protein concentration - and organ histopathology were only marginal.

Where specific chemical data are not available

No additional data.

Mixtures

No additional data.

Mixture versus ingredient information

No additional data.

Other information

No additional data.

12 Ecological information

Toxicity

Hazard for aquatic organisms

Freshwater

Hazard assessment conclusion:	PNEC aqua (freshwater)
PNEC value:	1 mg/L
Assessment factor:	10
Extrapolation method:	assessment factor

Marine water

Hazard assessment conclusion:	PNEC aqua (marine water)

PNEC value: 0.1 mg/L
Assessment factor: 100
Extrapolation method: assessment factor

STP
Hazard assessment conclusion: PNEC STP
PNEC value: 75.4 mg/L
Assessment factor: 10
Extrapolation method: assessment factor
Sediment (freshwater)
Hazard assessment conclusion: PNEC sediment (freshwater)

Hazard for air

Hazard for terrestrial organisms
Soil
Hazard assessment conclusion: PNEC soil

Acute and chronic toxicity data were available for the three main aquatic trophic levels that are considered for classification purposes. Classification is based on the lowest acute and chronic value, referred to as the acute and chronic toxicity reference value (TRV).
The lowest acute effect concentration was observed for the alga S. subspicatus (72h-EC_{50}), and was 36.8 mg SO32-/L. Translating this value to $Na_2S_2O_5$ results in an acute TRV of 43.7 mg/L for this substance.

A substance for which the acute TRV is situated between 10 and 100 mg/L, should be classified as Chronic 3, unless the chronic TRV is situated above 1 mg/L; in that case classification can be waived.

For sulfite/disulfite compounds, the lowest chronic value was a NOEC of >8.41 mg SO32-/L for the invertebrate D. magna. Translating this value to $Na_2S_2O_5$ results in a chronic TRV of 10.0 mg/L for this substance, i.e., > 1 mg/L.

Consequently, there is no need to classify disodium disulfite (disodium metabisulfite) for the environment.

Short-term toxicity to fish
LC_{50} for freshwater fish: 149.5 mg/L

Long-term toxicity to fish
EC_{10}, LC_{10} or NOEC for freshwater fish: 50 mg/L

Short-term toxicity to aquatic invertebrates
EC_{50}/LC_{50} for freshwater invertebrates: 74.9 mg/L

Long-term toxicity to aquatic invertebrates
EC_{10}, LC_{10} or NOEC for freshwater invertebrates: 8.41 mg/L

Toxicity to aquatic algae and cyanobacteria
EC_{50} for freshwater algae: 36.8 mg/L
EC_{10} or NOEC for freshwater algae: 28 mg/L

Toxicity to microorganisms
EC_{10} or NOEC for microorganisms: 634.4 mg/L

Persistence and degradability

The substance has a very low vapour pressure, and also does not sublime. Therefore, the substance will not be present as a gas and no radical reactions can be expected. According to its chemical properties, hydrolysis is not expected/probable. Photodegradation in water is not relevant because it dissociates rapidly into ions and decomposes in water, and it not susceptible to visible light.

The substance is an inorganic compound which does not undergo biodegradation. The substance readiliy dissociates in aqueous solution, as with soil moisture. Bioaccumulation is not to be expected. a low log Kow underlines this statement.

Due to the ionic salt-character and other physico-chemical properties (negligible vapour pressure, very high water solubility and decomposition in water), the Henry constant is near to zero. Because of its ionic nature, disodium disulfite as well as its dissociation products are not volatile from aqueous solutions. Relevant adsorption onto soils, sediments or suspended matter is not expected.

The substance is an inorganic compound and is not subject to biodegradation.

Bioaccumulative potential

The substance readily dissociates in aqueous solution or in contact with soil moisture. Bioaccumulation is not to be expected because of the resulting strong anionic nature of the substance, as well as its rapid oxidative transformation to sulfates under physiological and environmental circumstances. A low log Kow underlines this statement.

Mobility in soil

Due to the salt-character and physico-chemical properties (negligible vapour pressure, very high solubility and decomposition in water), the Henry constant is near to zero, and therefore sodium sulfite as well as its dissociation products are not volatile from aqueous solutions.

Relevant adsorption onto soils, sediments or suspended matter is not to be expected.

Other adverse effects

Administrative data

Endpoint: additional information on environmental fate and behaviour
Type of information: migrated information: read-across from supporting substance (structural analogue or surrogate)
Adequacy of study: supporting study
Reliability: 2 (reliable with restrictions)
Rationale for reliability incl. deficiencies: other: No standard test procedure, but in accordance with generally accepted scientific standards and described in sufficient detail. Peer reviewed.

Materials and methods

Test guideline
Qualifier: no guideline followed
Principles of method if other than guideline: The oxidation rate of aqueous sulfite solutions was studied in rainwater and heavy metal containing solutions
GLP compliance: no
Test material
Reference
Name: Unnamed
Type: Constituent
Results and discussion
Any other information on results incl. tables
Oxidation rates of sulfite (initially 0.5 - 0.7 ppm):

Metal (ppm)	EDTA (mM)	Temp (°C)	Rate constant (h-1)
Deionized water	-	20 -25	0.009
-	0.1	20 -25	0.0002
Fe, 1	-	25	>4.9
Fe, 1	0.1	20 -25	0.008
Fe, 0.1	-	25	0.36
Fe, 0.1	-	20	0.29
Fe, 0.05	-	15	0.13
Cu, 0.1	-	20	0.27
Mn, 0.1	-	20	0.12
Al, 0.1	-	20	0.086
Co, 0.1	-	20	0.057
Rain, june 18, 67	-	20	0.068

The reaction is substantially of the first order and the rate is much accelerated by the presence of small amounts of heavy

metals. The half-life time of sulfite in the natural rain water is more than a few hours.

13 Disposal considerations

Disposal methods

Waste disposal recommendations

At the time of review, criteria for land treatment or burial (sanitary landfill) disposal practices are subject to significant revision. Prior to implementing land disposal of waste residue (including waste sludge), consult with environmental regulatory agencies for guidance on acceptable disposal practices.

Dispose of waste and container in accordance with local, national and/or international regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove for physico-chemical/biological treatment. **DO NOT** discharge into drains or the environment.

Ecology - waste materials

Avoid release to the environment. Collect the waste separately.

Empty Container/Packaging

Recycle where possible. Discard in trash.

List of proposed waste codes/waste designations in accordance with EWC

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

14 Transport information

UN Number

TRANSPORTATION CLASSIFICATION	DOT	TDG	IMDG	IATA
Identification Number	N/A	N/A	N/A	N/A
Proper Shipping Name	N/A	N/A	N/A	N/A
Transport Hazard Class(es)	N/A	N/A	N/A	N/A
Packing Group	N/A	N/A	N/A	N/A
Environmental Hazards	N/A	N/A	N/A	N/A
Emergency Response	N/A	N/A	N/A	N/A
Additional Information	None	None	None	None

UN Proper Shipping Name

Not regulated for transport

Transport hazard class(es)

Not regulated for transport

Packing group, if applicable

Not regulated for transport

Environmental hazards

Not classified as an environmental hazardous substance.

Special precautions for user

None except those in sections 4 to 8.

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

Not applicable.

15 Regulatory information

Safety, health and environmental regulations specific for the product in question

SA NATIONAL LEGISLATION

Hazardous Substances Act 15 of 1973 and Regulations.
Occupational Health and Safety Act 85 of 1993 and Regulations.

SA NATIONAL STANDARDS

SANS 10228 : 2006 : Identification and Classification of Dangerous Goods for Transport by Road and Rail.
SANS 10231 : 2018 : Transport of dangerous goods - Operational requirements for road vehicles.
SANS 10234 : 2008 : Globally Harmonized System of classification and labelling of chemicals (GHS).
SANS 11014 : 2010 : Safety Data Sheets for chemical Products.

REACH Regulation (EC) No 1907/2006

This product contains only components that have been either pre-registered, registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH)., The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer´s/user´s responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

Seveso III: Directive 2012/18/EU

Listed in Regulation: Not applicable

TSCA Requirements

Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerned with production, exposure, and use to EPA as cited in the preamble in 51 FR 41329. Effective date 1/26/94; Reporting date: 3/28/94.

Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Sodium metabisulfite is included on this list. Effective date: 1/26/94; Sunset date: 6/30/98.

FDA Requirements

Sodium metabisulfite used as a chemical preservative in food for human consumption is generally recognized as safe when used in accordance with good manufacturing practice, except that it is not used in meats; in food recognized as a source of vitamin B1; on fruits or vegetables intended to be served raw to consumers or sold raw to consumers, or to be presented to consumers as fresh.

Sodium metabisulfite used as a chemical preservative in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice, except that it is not used in meats or in food recognized as source of vitamin B1.

Chemical safety assessment

Performed for this substance: YES

16 Other information

Other information

Full text of H & P - Statements referred to under section 2

Hazard statements

H302	Harmful if swallowed.
H318	Causes serious eye damage.

Precautionary statements

P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 IF SWALLOWED: call a POISON CENTER or doctor/physician IF you feel unwell.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Specific treatment is urgent (see P330+P351+P352 on this label).
P330 Rinse mouth.
P501 Dispose of contents and container in accordance with local, regional, national, international regulations.

Labelling REGULATION (EC) No 1272/2008
Signal Word
Danger
Pictograms Hazard to Human
GHS05 Corrosive Hazard
GHS07 Health Hazard
Pictogram Hazard during Transport
None

Training advice
Provide adequate information, instruction and training for operators.

Compiled by Aquatrade Water Treatment Chemicals (Pty) Ltd, R. van Rooyen, SHEQ Co-ordinator and E. Le Sar, Director.

MANUFACTURER/SUPPLIER DISCLAIMER:

IMPORTANT: This information is given without a warranty or guarantee. No suggestions for use are intended or shall be construed as a recommendation to infringe any existing patents or violate any national or local laws. Safe handling and use is the responsibility of the customer. Read the label before using this product. This information is true and accurate to the best of our knowledge.

Revision History

Revision:	Date:	Change:
1.0	2019/03/19	Preparation of the safety data sheet according to Regulation (EC) No 1907/2006 of the European Parliament and of the Council