

Sodium acetate

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IDENTIFICATION

Sodium acetate

E 262

ZVG No: 10760
CAS No: 127-09-3 anhydrous
EC No: 204-823-8

Related

CAS No: 6131-90-4 trihydrate

CHARACTERISATION

SUBSTANCE GROUP CODE

122200 Sodium compounds
143800 Carboxylic acid salts

STATE OF AGGREGATION

The substance is solid.

PROPERTIES

powder
colourless
odourless

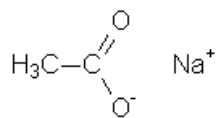
CHEMICAL CHARACTERISATION

Combustible substance, poorly flammable.
Freely soluble in water.
Hygroscopic.

[Substance information in Wikipedia](#)

FORMULA

$\text{C}_2\text{H}_3\text{NaO}_2$



Molar mass: 82,03 g/mol

PHYSICAL AND CHEMICAL PROPERTIES

[Melting point](#) | [Density](#) | [Flash point](#) | [Solubility](#) | [pH-value](#) | [Partition coefficient](#) | [Hazardous reactions](#)

MELTING POINT

Melting point: 58 °C

Liberation of water
trihydrate

Reference: [01211](#)

anhydrous

The substance decomposes when heated (see decomposition temperature).

Reference: [01211](#)

DENSITY

DENSITY

Value: 1,52 g/cm³

Temperature: 20 °C

anhydrous

Reference: [01211](#)

DENSITY

Value: 1,42 g/cm³

Temperature: 20 °C

trihydrate

Reference: [01211](#)

FLASH POINT

Flash point: > 250 °C

Closed cup

Reference: [01211](#)

SOLUBILITY IN WATER

Concentration: 365 g/l

anhydrous

Temperature: 20 °C

Reference: [01211](#)

Concentration: 613 g/l

trihydrate

Temperature: 20 °C

Reference: [01211](#)

pH-VALUE

pH-value: 7,5 ... 9,2

Temperature: 20 °C

Concentration: 30 g/l

Reference: [01211](#)

PARTITION COEFFICIENT (octanol/water)

log Kow: -4,22

Reference: [01211](#)

HAZARDOUS REACTIONS

Decomposition temperature: 324 °C

Hazardous chemical reactions

Risk of explosion in contact with:
potassium nitrate

The substance can react dangerously with:
fluorine
diketene (polymerization)

TOXICOLOGY / ECOTOXICOLOGY

TOXICOLOGICAL DATA

LD50 oral rat

Value: 3530 mg/kg

FAO Nutrition Meetings Report Series. Vol. 40, Pg. 126, 1967.

LD50 dermal

Species: Rabbit

Value: > 10000 mg/kg

BIOFAX Industrial Bio-Test Laboratories, Inc., Data Sheets.Vol. 19-3/1971,

Reference: [02071](#)

OCCUPATIONAL HEALTH AND FIRST AID

[Routes of exposure](#) | [Toxic effects](#) |
[First Aid](#)

ROUTES OF EXPOSURE

Main routes of exposure

The main route of exposure for sodium acetate (SA) under occupational conditions is via the respiratory tract.[99999]

Respiratory tract

Exposure via inhalation must chiefly be expected to occur to dusts of anhydrous SA. The trihydrate consists of rough crystals and is strongly hygroscopic, and, therefore, the tendency to form dusts is expected to be very restricted.

An exposure to vapours is to be considered only from with mineral acid solutions (and then to acetic acid).[99999]

Information on the resorption of inhaled dust particles is not available.[99983]

However, due to very rapid resorption in the digestive tract, intake of the acetate ion via the mucosae of the respiratory tract is also to be expected.[99999]

Skin

Relevant information is not available.[99983]

The conditions of short-term contact with SA or its solutions are not expected to entail any health-damaging effects.[99999]

Gastrointestinal tract

SA is resorbed via the digestive tract rapidly and extensively.[99997]

TOXIC EFFECTS

Main toxic effects

Acute effects:

Weak irritative effects of the solid substance on the mucosae of the eyes and on the skin;

Chronic effects:

Ditto.[99997]

Acute toxicity

In an animal experiment crystalline SA triggered weak irritations to the eyes and the skin of rabbits. However, 10% aqueous solution did not trigger any effects in standardised studies on rabbit eyes. [99997]

Therefore, non-extreme skin contact with aqueous solutions (with regard to contact area and duration of the exposure) is not expected to entail any skin-damaging (and probably any resorptive) effects.[99999]

Experiences from animal experiments pertaining to systemic effects of SA dust inhalation are not available.[99983]

However, due to results and experiences pertaining to oral and parenteral exposures of humans and animals, health-damaging resorptive effects, apart from irritations after massive inhalation, are hardly to be expected.[99999]

Oral intake of SA is assumed to involve a relatively low toxicity; LD50 values in rats and mice ranged around 5 g per kg of body weight. Formerly, many years of application of the substance (as a diuretic agent) and current utilisation as a therapeutic agent in the broadest sense (high concentrations in haemodialysis fluids) as well as the approval as a food additive confirm this assessment.[99997]

An acute health risk for humans after accidental oral intake (< approx. 200 mg per kg of body weight) can probably thus be ruled out.[99999]

Chronic toxicity

Experience reports on the consequences of repeated exposure to SA at workplaces were not provided by the available literature.

A health-impairing effect beyond a possible irritative potential of the substance on the mucosae and the skin is hardly to be expected under 'normal exposure conditions'.[99999]

However, information on possible sensitising effects and their consequences is not available, including from animal experiments.[99983]

Available animal experiments on the effects of repeated exposures (application occurred almost exclusively with food or drinking water) that resulted in alkalosis (slight disorders of the electrolyte status) and increased urine production as well as changed thyroid functions after the application of high SA concentrations are hard to assess because the study methods and documentations are often irrelevant.

Exposure of volunteers to several increasing daily doses (up to 15 g of SA per day) did not trigger any clinical changes in health condition besides an increased elimination of citrate in the urine.

The following symptoms were reported in a critical overview of side effects triggered by SA in connection with repeated massive application of SA to humans as a therapeutic agent:

Hyperphosphataemia, chronic hypocalcaemia, secondary hyperfunction of the parathyroid gland, bone damage, hypertension and abnormal metal deposition in the brain and other tissues.[99997]

However, the effects triggered by SA reported here (also those depending on the exposed person's disposition) are expected to be only slightly relevant with regard to the industrial handling of SA. [99999]

Reproductive toxicity, mutagenicity, carcinogenicity

Reproductive toxicity:

Animal experiments yielded inconsistent data on the reproduction-toxic potential (chiefly with regard to fertility disorders).[99997] Substance-specific information pertaining to humans is not available [99983].

Mutagenicity:

In-vitro and in-vivo tests available to date have not demonstrated any mutagenic potential of SA. [99997]

Carcinogenic potential:

No substance-specific information available.[99983]

Biotransformation and excretion

The acetate ion is a normal metabolite and occurs in the blood with concentrations of up to 0.1 mmolar. Endogenous and exogenous acetates are not only integrated in the citric acid cycle (finally oxidation -> CO₂), but also in the C1 metabolism. Metabolisation occurs chiefly in the liver, but also in other organs. The required energy of humans is only poorly covered by acetate (in contrast to ruminants). The rapid transformation of exogenous acetate to bicarbonate (half-life: several minutes) appears to depend on the age and the individual disposition. A lower metabolisation potential was associated with the incompatibility of some humans to high acetate doses.[99997]

Annotation

This occupational health information was compiled on 01.07.1996.

It will be updated if necessary.

This information was translated from German into English by Übersetzungsbüro Branco.

FIRST AID

Eyes

Rinse the affected eye with widely spread lids for 10 minutes under running water whilst protecting the unimpaired eye.

Arrange medical treatment.

[00022]

Skin

Rinse the affected skin areas for at least 10 to 20 minutes under running water.

Remove contaminated clothing while protecting yourself.

[00022]

Respiratory tract

After inhalation of dusts or possibly aerosols, you must immediately:
Whilst protecting yourself remove the casualty from the hazardous area and take him to the fresh air.
Lay the casualty down in a quiet place and protect him against hypothermia.
Arrange medical treatment.
[00022]

Swallowing

Rinse the mouth and spit the fluids out.
If the casualty is conscious have him drink 1 glass of water (ca 200 ml).
Arrange medical treatment.
If spontaneous vomiting occurs, hold the head of the casualty low with the body in a prone position in order to avoid aspiration.

Information for physicians

SA counts as a scarcely health-damaging substance.[00022]

- Symptoms of acute toxicity:

Eyes: Weak irritative effects after contact with dusts, scarcely any irritations after contact with aqueous solutions < 10 weight %;

Skin: Ditto;[99997]

Inhalation: no progress reports available;[99983] symptoms of irritation in the case of massive dust exposure are assumed, and systemic effects are not to be excluded but are unlikely;[99999]

Ingestion: Slight irritations after oral intake of solutions; clinical toxicity signs after intake of amounts of up to approx. 15 g (by healthy adults) are hardly to be expected;

Absorption: Massive oral exposure entails alkalosis and further disorders of the electrolyte balance; diuretic effects are possible.[99997]

- First medical assistance:

Pronounced eye damage must hardly be expected to occur after contact with aqueous SA solutions. However, after massive eye contact with dust, the casualty should be examined by an ophthalmologist after intensive rinsing with water.

Skin contaminations by SA or its solutions are not expected to require any further treatment after decontamination with water.

Massive inhalation of dusts might require oxygen supply. Follow-up monitoring is required.

Ingestion of SA solutions in gram doses are to be treated only in exceptional cases (primary elimination).

However, admission of the casualty to hospital for follow-up treatment including the control of the circulatory, kidney and liver functions is still recommended. The electrolyte balance (particularly potassium/Na and bicarbonate) must be controlled in all cases.[99999]

Recommendations

Provide the physician information about the substance/product and treatment already administered.

Annotation

This first aid information was compiled on 01.07.1996.

It will be updated if necessary.

This information was translated from German into English by Übersetzungsbüro Branco.

SAFE HANDLING

[Handling](#) | [Storage](#) | [Fire and explosion protection](#) | [Personal protection](#) | [Disposal considerations](#) | [Accidental release measures](#) | [Fire fighting measures](#)

TECHNICAL MEASURES - HANDLING

Workplace

Select ventilation measures according to the other used substances.

If there is a chance that dusts may be released, then the work room must provide adequate ventilation.

Washing facility at the workplace required.

Equipment

Suction off dust at the point of exit.

Consider emission limit values, a purification of waste gases if necessary.

Containers are to be marked clearly.

Advice on safer handling

Take care to keep workplace clean and dry.

Do not leave container open.

Sufficient ventilation must be guaranteed for refilling, transfer, or open use.

Fill only into clearly marked containers.

Avoid rising dust.

Cleaning and maintenance

Avoid dust formation. Dust formation that cannot be avoided must be collected regularly.

Use a tested industrial vacuum cleaner or suction device.

Do not raise dust while cleaning.

Use of a blower for cleaning is not permitted.

TECHNICAL MEASURES - STORAGE**Storage**

Do not use any food containers - risk of mistake.

Containers have to be marked clearly and permanently.

Keep container tightly closed.

Storage temperature: Without any limitation.

Store in a dry place.

Substance is hygroscopic, protect from moisture.

Conditions of collocated storage

Storage class 10 - 13 (Other liquids and solids)

Only substances of the same storage class should be stored together.

Collocated storage with the following substances is prohibited:

- Pharmaceuticals, foods, and animal feeds including additives.
- Infectious, radioactive und explosive substances.
- Strongly oxidizing substances of storage class 5.1A.

Under certain conditions the collocated storage with the following sub-stances is permitted (For more details see [TRGS 510](#)):

- Gases.
 - Flammable liquids of storage class 3.
 - Other explosive substances of storage class 4.1A.
 - Pyrophoric substances.
 - Substances liberating flammable gases in contact with water.
 - Oxidizing substances of storage class 5.1B.
 - Ammonium nitrate and preparations containing ammonium nitrate.
 - Organic peroxides and self reactive substances.
 - Combustible and non combustible acutely toxic substances of storage classes 6.1A and 6.1B.
- The substance should not be stored with substances with which hazardous chemical reactions are possible.

TECHNICAL MEASURES - FIRE AND EXPLOSION PROTECTION**Technical, constructive measures**

Substance is combustible.

Fire fighting equipment must be available.

PERSONAL PROTECTION

Body protection

Wear an apron or a lab coat.

Respiratory protection

In an emergency (e.g.: unintentional release of the substance) respiratory protection must be worn. Consider the maximum period for wear.

Respiratory protection: Particle filter P1, colour code white.

Eye protection

Wear glasses with side protection.

Hand protection

If protective gloves are used, the following materials are recommended:

The following information is valid for aqueous, saturated solutions of the salt.

The following materials are suitable for protective gloves (Permeation time \geq 8 hours):

Natural rubber/Natural latex - NR (0,5 mm) (use non-powdered and allergen free products)

Polychloroprene - CR (0,5 mm)

Nitrile rubber/Nitrile latex - NBR (0,35 mm)

Butyl rubber - Butyl (0,5 mm)

Fluoro carbon rubber - FKM (0,4 mm)

Polyvinyl chloride - PVC (0,5 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.

Occupational hygiene

Take heed of usual occupational hygiene measures when handling chemical substances, especially wash the skin with soap and water before breaks and at the end of work and apply fatty skin-care products after washing.

DISPOSAL CONSIDERATIONS

Non-hazardous waste according to Waste Catalogue Ordinance (AVV).

If there is no way of recycling it must be disposed of in compliance with the respective national and local regulations.

Collection of small amounts of substance:

Collect in container for inorganic solids.

Neutral solutions (pH-control):

Place in a collection container for salt solutions, adjust for a pH value of 6-8.

Do not put/place waste into sink or dust bin.

Collection vessels must be clearly labelled with a systematic description of their contents. Store the vessels in a well-ventilated location. Entrust them to the appropriate authorities for disposal.

ACCIDENTAL RELEASE MEASURES

Wear a dust mask.

Pick up without creating dust.

Afterwards ventilate area and wash spill site.

Endangerment of water:

Low hazard to waters. Inform the responsible authorities when very large quantities get into water, drainage, sewer, or the ground.

FIRE FIGHTING MEASURES

Suitable extinguishing media

Water (spray - not splash)
Dry extinguishing powder
Foam
Carbon dioxide

Instructions

If possible, take container out of dangerous zone.
Shut off sources of ignition.

Special protective equipment

In the case of a fire hazardous substances can be released.
Carbon monoxide and carbon dioxide
Metal oxide fume
Wear self-contained breathing apparatus.

REGULATIONS

[GHS Classification/Labelling](#) | [Water hazard class](#) | [Air quality control](#) | [Transport Regulations](#) | [Technical rules](#) | [Regulations of accident insurers](#)

EUROPEAN GHS CLASSIFICATION AND LABELLING

Not a dangerous substance according to GHS.
Manufacturer's specification by Sigma-Aldrich

Reference: [01221](#)

State: 2021

Checked: 2022

GERMAN WATER HAZARD CLASS

Substance No: 367

WGK 1 - low hazard to waters

Classification according to the announcement of the list of substances hazardous to water in the Federal Register of 10.08.2017, last update 24.11.2023

TECHNICAL INSTRUCTIONS ON AIR QUALITY CONTROL (TA LUFT)

Chapter 5.2.5 Organic Substances, dust

To be treated as overall dust. The emissions of dust in the exhaust gas are not allowed to exceed the following values:

Mass flow: 0,20 kg/hr

or

Mass conc.: 20 mg/m³

The mass per unit volume of 0,15 g/m³ in exhaust gas is not allowed to be exceeded also on observance or lower deviation of a mass flow of 0,20 kg/h.

TRANSPORT REGULATIONS

Not subject to transport regulations.

Reference: [01221](#)

TECHNICAL RULES FOR HAZARDOUS SUBSTANCES

[TRGS 500](#)

Schutzmaßnahmen; Ausgabe September 2019

[TRGS 509](#)

Lagern von flüssigen und festen Gefahrstoffen in ortsfesten Behältern sowie Füll- und Entleerstellen für ortsbewegliche Behälter; Ausgabe Juni 2022

[TRGS 510](#)

Lagerung von Gefahrstoffen in ortsbeweglichen Behältern; Ausgabe Januar Dezember 2020

[TRGS 800](#)

Brandschutzmaßnahmen; Ausgabe Dezember 2010

REGULATIONS OF GERMAN ACCIDENT INSURERS

[DGUV Regel 112-190](#)

Benutzung von Atemschutzgeräten, Ausgabe November 2021
(in German only)

LINKS

[DGUV Information 213-098: List of substances - lesson in schools \(in German only\)](#)

REFERENCES

Quelle: 00001

IFA: Erfassungs- und Pflegehandbuch der GESTIS-Stoffdatenbank (nicht öffentlich)

Data acquisition and maintenance manual of the GESTIS substance database (non-public)

Quelle: 00022

G. Hommel

"Handbuch der gefährlichen Güter" Loseblattsammlung mit Ergänzungslieferungen

"Handbook of dangerous goods " loose-leaf collection with supplement deliveries

Springer-Verlag, Heidelberg

Quelle: 00302

G. Hommel "Handbuch der gefährlichen Güter" ("Handbook of Dangerous Goods"), CD-ROM

"Hommel interaktiv" ab Version 10.0 Springer-Verlag, Heidelberg, 2011

Quelle: 01211

GHS-Sicherheitsdatenblatt, Merck

GHS Material Safety Data Sheet, Merck

Quelle: 01221

GHS-Sicherheitsdatenblatt, Sigma-Aldrich

GHS Material Safety Data Sheet, Sigma-Aldrich

Quelle: 02071

Toxicological Data, compiled by the National Institute of Health (NIH), USA, selected and distributed by Technical Database Services (TDS), New York, 2009

Quelle: 05300

[TRGS 510](#) "Lagerung von Gefahrstoffen in ortsbeweglichen Behältern" Ausgabe Dezember 2020

Quelle: 06002

L. Roth, U. Weller

"Gefährliche Chemische Reaktionen" Loseblattsammlung mit Ergänzungslieferungen, ecomed-Verlag

("Dangerous chemical reactions" loose-leaf collection with supplement deliveries)

Quelle: 07580

Bekanntmachung der Liste der wassergefährdenden Stoffe im Bundesanzeiger vom 10.08.2017, zuletzt geändert 24.11.2023

Quelle: 07795

H. Geerßen "GloSaDa 2000 Plus - Glove Safety Data"

Quelle: 99983

Liste arbeitsmedizinisch-toxikologischer Standardwerke (2)

List of standard references regarding occupational health and toxicology (2)

Quelle: 99997

Projektgebundene arbeitsmedizinisch-toxikologische Literatur (1)

Project related bibliographical references regarding occupational health and toxicology (1)

Quelle: 99999

Angabe des Bearbeiters

Indication of the editor

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