

Sodium dodecyl sulfate



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IDENTIFICATION

Sodium dodecyl sulfate

Lauryl sulfate, sodium salt
Dodecyl sodium sulfate
Dodecyl sulfate sodium
Duponolmethyl
Lauryl sodium sulfate

ZVG No: 20800
CAS No: 151-21-3
EC No: 205-788-1

CHARACTERISATION

SUBSTANCE GROUP CODE

122200 Sodium compounds
147875 Salts of sulphuric acid esters

STATE OF AGGREGATION

The substance is solid.

PROPERTIES

needles
white
odourless

CHEMICAL CHARACTERISATION

Flammable solid.

Can be ignited by the brief effects of exposure to sources of ignition and continues to burn when these are no longer present. The risk of ignition is greater the more finely the substance is spread.

Freely soluble in water.

Acute or chronic health hazards result from the substance.

The substance is hazardous to the aquatic environment.

(see: chapter REGULATIONS).

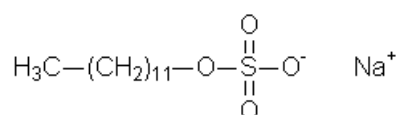
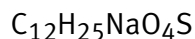
DUST EXPLOSIVENESS

There is a risk of a dust explosion if the following conditions are met:

- The substance is given in very finely distributed form (powder, dust).
- The substance is whirled up in sufficient quantity in the air.
- An ignition source is present (flame, spark, electrostatic discharge, etc.)

Quelle: [06806](#)

FORMULA



Molar mass: 288,38 g/mol

PHYSICAL AND CHEMICAL PROPERTIES

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

MELTING POINT

Melting point: 204 ... 207 °C

Reference: [01211](#) [01221](#)

DENSITY

DENSITY

Value: 1,1 g/cm³

Temperature: 20 °C

Reference: [01211](#)

FLASH POINT

Flash point: 170 °C

Reference: [01221](#)

SOLUBILITY IN WATER

Concentration: 150 g/l

Temperature: 20 °C

Reference: [01211](#)

pH-VALUE

pH-value: 9,1

Temperature: 20 °C

Concentration: 10 g/l

Reference: [01221](#)

PARTITION COEFFICIENT (octanol/water)

log Kow: 1,6

Reference: [01211](#)

HAZARDOUS REACTIONS

Decomposition temperature: 380 °C

TOXICOLOGY / ECOTOXICOLOGY

TOXICOLOGICAL DATA

LD50 oral rat

Value: 1290 mg/kg

Food and Cosmetics Toxicology. Vol. 5, Pg. 763, 1967.

Reference: [02071](#)

ECOTOXICOLOGICAL DATA

LC50 Fish (96 hours)

Minimum: 0,59 mg/l

Maximum: 38 mg/l

Median: 7,97 mg/l

Study number: 43

Reference for median:

Fogels, A., and J.B. Sprague 1977. Comparative Short-Term Tolerance of Zebrafish, Flagfish, and Rainbow Trout to Five Poisons Including Potential Reference Toxicants. Water Res. 11(9):811-817

LC50 Crustaceans (48 hours)

Minimum: 1,26 mg/l

Maximum: 162 mg/l

Median: 12,1 mg/l

Study number: 133

Reference for median:

Lewis, P.A., and W.B. Horning II 1991. Differences in Acute Toxicity Test Results of Three Reference Toxicants on Daphnia at Two Temperatures. Environ.Toxicol.Chem. 10:1351-1357

EC50 Crustaceans (48 hours)

Minimum: 2,98 mg/l

Maximum: 51,5 mg/l

Median: 9,8 mg/l

Study number: 7

Reference for median:

Rossini, G.D.B., and A.E. Ronco 1996. Acute Toxicity Bioassay Using Daphnia obtusa as a Test Organism. Environ.Toxicol.Water Qual. 11(3):255-258

EC50 Algae (72 or 96 hours)

Test duration: 72 hours

Minimum: 15 mg/l

Maximum: 15 mg/l

Median: 15 mg/l

Study number: 1

Reference for median:

Peterson, S.M., and J.L. Stauber 1996. new Algal Enzyme Bio assay for the Rapid Assessment of Aquatic Toxicity. Bull.Environ.Toxicol.Chem. 56(5):750-757

Reference: [02072](#)

EC50 Algae (72 or 96 hours)

Test duration: 96 hours

Minimum: 8,8 mg/l

Maximum: 117 mg/l

Median: 9,46 mg/l

Study number: 5

Reference for median:

Hickey, C.W., C. Blaise, and G. Costan 1991. Microtesting Appraisal of ATP and Cell Recovery Toxicity End Points After Acute Exposure of *Selenastrum capricornutum* to Selected Chemicals. Environ.Toxicol.Water Qual. 6(4):383-403

Reference: [02072](#)

SAFE HANDLING

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

TECHNICAL MEASURES - HANDLING

Workplace

Provision of good ventilation in the working area.

The floor should not have a floor drain.

Washing facility at the workplace required.

Eye bath required. These locations must be signposted clearly.

When handling excessive amounts of the substance an emergency shower is required.

Equipment

Use closed apparatus if possible.

If release of the substance cannot be prevented, then it should be suctioned off at the point of exit.

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

Label containers and pipelines clearly.

Advice on safer handling

Take care to maintain clean working place.

The substance must not be present at workplaces in quantities above that required for work to be progressed.

Do not leave container open.

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

Avoid spillage.

Fill only into labelled container.

Avoid any contact when handling the substance.

Avoid rising dust.

Use an appropriate exterior vessel when transporting in fragile containers.

Cleaning and maintenance

Use protective equipment while cleaning if necessary.

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

Use tested industrial vacuum cleaners or suction systems for areas with a high risk of explosion.

Do not raise dust while cleaning.

Use of a blower for cleaning is not permitted.

Alternative: clean damp.

Only conduct maintenance and other work on or in the vessel or closed spaces after obtaining written permission.

TECHNICAL MEASURES - STORAGE

Storage

Do not use any food containers - risk of mistake.

Containers have to be labelled clearly and permanently.

Store in the original container as much as possible.

Preferably use unbreakable containers rather than glass containers.

Place fragile vessels in break-proof outer vessels.

Keep container tightly closed.

Recommended storage at room temperature.

Store in a dry place.

Store apart from sources of ignition and heat.

Conditions of collocated storage

Storage class 8 A (Combustible corrosive substances)

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.
- Organic peroxides and self reactive substances.

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

- Gases.
- 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.

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.

If there is a risk of a dust explosion due to the dust-like distribution and the quantities used, measures according to [TRGS 722](#) (prevention of formation), [723](#) (prevention of ignition) and [TRGS 724](#) (constructive explosion protection) may become necessary.

Precaution on handling

Area with fire risk.

Areas in which the substance can arise as a dust in such quantities that a dust explosion could occur are to be considered as at a risk of explosion.

Keep away from sources of ignition (e.g. open flames, heat sources and sparks).

Observe the smoking prohibition!

Absolutely no welding in the working area.

Only work with vessels and lines after these have been thoroughly rinsed and inerting.

Work done with fire or open flame should only be carried out with written permission if the risk of fire or explosion cannot be completely eliminated.

ORGANISATIONAL MEASURES

Instruction on the hazards and the protective measures using instruction manual ([TRGS 555](#)) are required with signature if just more than one minor hazard was detected.

Instruction must be provided before employment and then at a minimum of once per annum thereafter.

An escape and rescue plan must be prepared when the location, scale, and use of the work-site so demand.

Observe the restrictions on juvenile employment as defined in the "Jugendarbeitsschutzgesetz".

PERSONAL PROTECTION

Body protection

Depending on the risk, wear a suitable protective clothing or a suitable chemical protection suit.

Wear flameproof, antistatic protective clothing.

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 P2, colour code white.

Use insulating device for concentrations above the usage limits for filter devices, for oxygen concentrations below 17% volume, or in circumstances which are unclear.

Eye protection

Sufficient eye protection must be worn.

Wear chemical safety goggles.

Hand 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.

Skin protection cremes do not protect sufficiently against the substance.

The following data refers to the 10% aqueous solution:

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

Foods, beverages and other articles of consumption must not be consumed at the work areas. Suitable areas are to be designated for these purposes.

Avoid contact with skin. In case of contact wash skin.

Avoid contact with eyes. In case of contact rinse the affected eye(s).

Avoid inhalation of dust.

Avoid contact with clothing. Contaminated clothes must be exchanged and cleaned carefully.

The skin must be washed with soap and water before breaks and at the end of work.

Apply fatty skin-care products after washing.

DISPOSAL CONSIDERATIONS

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 toxic, flammable compounds.

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

Shut off all sources of ignition.

Evacuate area. Warn affected surroundings.

The hazardous area may only be entered once suitable protective measures are implemented. Only then can the hazardous situation be removed (see chapter Personal Protection).

Pick up without creating dust.

Use non-sparking tools.

Afterwards ventilate area and wash spill site.

Endangerment of water:

Distinct hazard to waters. Prevent penetration into water, drainage, sewer, or the ground. Inform the responsible authorities about penetration of larger quantities.

FIRE FIGHTING MEASURES

Suitable extinguishing media

Water (spray - not splash)

Dry extinguishing powder

Alcohol resistant foam

Carbon dioxide

Instructions

Seek immediate cover in case of sudden release and raising of large quantities of dust.

Cool surrounding containers with water spray.

If possible, take container out of dangerous zone.

Shut off sources of ignition.

Use only explosion proved equipment.

Do not allow runoff to get into the sewage system.

Special protective equipment

In the case of a fire hazardous substances can be released.

Sulfur oxides

Carbon monoxide and carbon dioxide

Wear self-contained breathing apparatus and special tightly sealed suit.

REGULATIONS

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

EUROPEAN GHS CLASSIFICATION AND LABELLING

Classification

Flammable solids, Category 2; H228
 Acute toxicity, Category 4, oral; H302
 Acute toxicity, Category 4, inhalation; H332
 Skin irritation, Category 2; H315
 Serious eye damage, Category 1; H318
 Specific Target Organ Toxicity (single exposure), Category 3; H335
 Hazardous to the aquatic environment, Chronic Category 3; H412



Signal Word "Danger"

Hazard Statement - H-phrases

H228: Flammable solid.
 H302+H332: Harmful if swallowed or if inhaled.
 H315: Causes skin irritation.
 H318: Causes serious eye damage.
 H335: May cause respiratory irritation.
 H412: Harmful to aquatic life with long lasting effects.

Precautionary Statement - P-phrases

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280: Wear eye protection/face protection.
 P301+P312+P330: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
 P305+P351+P338+P310: 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.
 P370+P378: In case of fire: Use dry powder or dry sand to extinguish.

Manufacturer's specification by Sigma-Aldrich

GESTIS advice:

Classification is valid for solid material having a bulk density of < 400 g/L.
 With a bulk density ≥ 400 g/L is omitted: H228; H332; H335 and the GHS Pictograms GHS02.
 Registration entry of the manufacturer on the ECHA website

Reference: [01221 07520](#)

State: 2020

Checked: 2021

GHS-CLASSIFICATION OF MIXTURES

The classification of mixtures containing this substance results from Annex 1 of Regulation (EC) 1272/2008.

Reference: [99999](#)

WORKPLACE LABELLING ACCORDING TO GERMAN [ASR A1.3](#)

Prohibition label



No open flame; fire, open ignition sources and smoking prohibited



No admittance for unauthorized persons

Warning label



Caution - inflammable material



Caution - corrosive material

Precept label



Use safety goggles



Wear safety gloves

GERMAN WATER HAZARD CLASS

Substance No: 664

WGK 2 - distinct 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, class I

The following values are in all not allowed to be exceeded in the exhaust gas:

Mass flow: 0,10 kg/hr

or

Mass conc.: 20 mg/m³

TRANSPORT REGULATIONS

UN Number: 1325
Shipping name: Flammable solid, organic,
n.o.s.
Hazard Identification Number: 40
Class: 4.1 (Flammable solids)
Packing Group: III (low danger)
Danger Label: 4.1



Classification code: F1

Tunnel restrictions:
Passage forbidden through tunnels of category E.

Reference: [01221](#)

RESTRICTIONS OF USE / BANS OF USE

REACH Regulation (EC) No 1907/2006 Annex XVII

Annex XVII, Point 40

Shall not be used, as substance or as mixtures in aerosol dispensers where these aerosol dispensers are intended for supply to the general public for entertainment and decorative purposes such as the following:

- metallic glitter intended mainly for decoration,
- artificial snow and frost,
- “whoopee” cushions,
- silly string aerosols,
- imitation excrement,
- horns for parties,
- decorative flakes and foams,
- artificial cobwebs,
- stink bombs.

Further information on prohibitions and exceptions can be taken from the regulation.

Annex XVII to Regulation (EC) No 1907/2006, [consolidated version](#) (BAUA) (only in German)

TECHNICAL RULES FOR HAZARDOUS SUBSTANCES

[TRGS 201](#)

Einstufung und Kennzeichnung bei Tätigkeiten mit Gefahrstoffen; Ausgabe Februar 2017, zuletzt geändert und ergänzt April 2018

[TRGS 400](#)

Gefährdungsbeurteilung für Tätigkeiten mit Gefahrstoffen; Ausgabe Juli 2017

[TRGS 555](#)

Betriebsanweisung und Information der Beschäftigten; Ausgabe Februar 2017

[TRGS 600](#)

Substitution; Ausgabe Juli 2020

[TRGS 401](#)

Gefährdung durch Hautkontakt, Ermittlung - Beurteilung - Maßnahmen; Ausgabe Oktober 2022

[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

[TRGS 720](#)

Gefährliche explosionsfähige Gemische - Allgemeines; Ausgabe Juli 2020, zuletzt berichtigt März 2021

[TRGS 721](#)

Gefährliche explosionsfähige Gemische - Beurteilung der Explosionsgefährdung; Ausgabe Oktober 2020, zuletzt berichtigt Dezember 2020

[TRGS 722](#)

Vermeidung oder Einschränkung gefährlicher explosionsfähiger Atmosphäre; Ausgabe Februar 2021

[TRGS 723](#)

Gefährliche explosionsfähige Gemische - Vermeidung der Entzündung gefährlicher explosionsfähiger Gemische; Ausgabe Juli 2019, zuletzt geändert Oktober 2020

[TRGS 724](#)

Gefährliche explosionsfähige Gemische - Maßnahmen des konstruktiven Explosionsschutzes, welche die Auswirkung einer Explosion auf ein unbedenkliches Maß beschränken; Ausgabe Juli 2019

REGULATIONS OF GERMAN ACCIDENT INSURERS

[DGUV Regel 112-190](#)

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

LINKS

[OECD Screening Information DataSet \(SIDS\)](#)

[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: 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: 02072

Ecotoxicological Data, compiled by the US Environmental Protection Agency (EPA), selected and distributed by Technical Database Services (TDS), New York, 2009

Quelle: 06806

GESTIS-STaub-EX-Datenbank des IFA www.dguv.de/ifa/gestis-staub-ex

Quelle: 07520

Europäische Chemikalienagentur ECHA: Informationen über registrierte Substanzen

European Chemicals Agency ECHA: Information on registered substances

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: 99999

Angabe des Bearbeiters

Indication of the editor

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