IFA
Institut für Arbeitsschutz der
Deutschen Gesetzlichen Unfallversicherung

Lithium carbonate

IDENTIFICATION

Lithium carbonate

ZVG No:	5270
CAS No:	554-13-2
EC No:	209-062-5

CHARACTERISATION

SUBSTANCE GROUP CODE

122100 Lithium compounds
125200 Carbonates, hydrogen carbonates

STATE OF AGGREGATION

The substance is solid.

PROPERTIES

crystals or powder
white
odourless

CHEMICAL CHARACTERISATION

Non-combustible substance.
Sparingly soluble in water.
Aqueous solution reacts alkaline.
Acute or chronic health hazards result from the substance.
(see: chapter REGULATIONS).

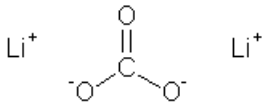
Substance information in Wikipedia

DUST EXPLOSIVENESS

No hints on the possibility of a dust explosion are given for this substance.
Quelle: *99999*

FORMULA

Li_2CO_3
CLi_2O_3



Molar mass: 73,89 g/mol

PHYSICAL AND CHEMICAL PROPERTIES

Melting point | Boiling point | Density | Solubility | pH-value | Hazardous reactions

MELTING POINT

Melting point: 723 °C
Reference: 00454

BOILING POINT

The substance decomposes when heated (see decomposition temperature).
Reference: 99999

DENSITY

DENSITY
Value: 2,11 g/cm³
Reference: 00454

SOLUBILITY IN WATER

Concentration: 8,4 g/l
Temperature: 20 °C
Reference: 01221

pH-VALUE

pH-value: 9 ... 11
Temperature: 20 °C
Concentration: 1 g/l
Reference: 01221

HAZARDOUS REACTIONS

Decomposition temperature: 1300 °C

Hazardous chemical reactions

Risk of explosion in contact with:
calcium (powder)

The substance can react dangerously with:
fluorine

TOXICOLOGY / ECOTOXICOLOGY

TOXICOLOGICAL DATA

LD50 oral rat

Value: 525 mg/kg

Kiso to Rinsho. Clinical Report. Vol. 7, Pg. 1273, 1973.

Reference: 02071

OCCUPATIONAL HEALTH AND FIRST AID

Routes of exposure | Toxic effects |
First Aid

ROUTES OF EXPOSURE

Main routes of exposure

In industrially exposed persons, the major route of exposure for lithium carbonate (LC) is via the respiratory tract (inhalation). [99999]

Respiratory tract

Inhalation of LC can be inhaled in the form of respirable dusts or aerosols. Observations made with LC and comparable lithium salts in humans and rodents point to effective absorption via this route of exposure. [99999]

Skin

Dermal absorption of LC by humans is considered to be minor. Repeated exposures of humans to lithium chloride did not involve any significantly increased serum concentrations in comparison with non-exposed persons. [7619, 99999]

Gastrointestinal tract

Oral absorption of LC occurs almost completely, but slowly (serum maxima after 1 to 4 hours) due to the poorer water solubility of LC in comparison with the easily soluble lithium compounds, e.g., lithium chloride. [7619]

TOXIC EFFECTS

Main toxic effects

Acute effects:
Irritative effects to the eyes and the respiratory tract, disorders of the CNS [7619]
Chronic effects:
Effects on the CNS, the heart, the kidneys, the thyroid gland and the reproduction system. [7619]

Acute toxicity

The dissociation of the LC salt in aqueous solutions entails the release of the physiologically occurring bicarbonate ions and the toxically relevant lithium ions. The slightly alkaline nature of lithium carbonate triggers irritations of the mucosae, but no skin irritations. [7619]
Information on the eye-irritating effects or a sensitising potential of LC on human skin is lacking. Valid tests on the eyes performed in animal experiments with LC involved haemorrhages and white areas on the conjunctiva of unrinsed eyes, whereas the severity and duration were clearly lower in eyes that were rinsed shortly after the treatment. The reversibility of the irritation occurred after 4 days in case of rinsed eyes and after 7 days in case of unrinsed ones. LC was assessed to possess a moderate eye-irritating, but no corrosive potential. The local irritative potential and the injuries must be ascribed to the basicity of the compound after contact with water (pH value of a 1% solution: 11.2). [7520, 7619]
Single dermal application of LC (2,000 mg per kg of body weight, occlusive) did not cause skin irritations in rabbits. [7619]
In a test in accordance with OECD directive 404, LC caused reversible skin irritations (erythema) in 1 of 3 animals, which were assessed as irrelevant for a classification. [7520, 7619]
Animal experiments with LC on guinea pigs in accordance with OECD directive 406 could not demonstrate sensitisations of the skin. [7520, 7619]
The dermal toxicity of LC in animal experiments in accordance with OECD directive 402 was minor (without use of a vehicle, only wetting with drinking water, LD50 rats ›2,000 mg per kg of body weight). [7520, 7619]
Valid tests on the inhalation toxicity in rats yielded an LC50 value of more than 800 mg LC/m³ after 4-hour exposure to inhalable LC dusts. [7619]
Single oral intake of 5 g LC can cause the death of humans. [7619]
Acute toxicity is expected to entail the same symptoms as those involved in the long-term therapy (see ‘Chronic toxicity’). In acute excessive doses, the severity of the symptoms is lower in the case of identical serum concentrations. [7978]
The oral toxicity of the substance was minor in animal experiments. The revealed LD50 values must be classified: LD50, rats 525-753 mg LC.

Chronic toxicity

The dissociation of the LC salt in aqueous solutions entails the release of the bicarbonate ions and the toxically relevant lithium ions. Studies with LC are rare. Therefore, assessments referred to studies with comparable lithium salts, and the results of these studies are considered to be transferable to LC. [7619, 99999]
After industrial exposures to alkaline lithium dust (e.g., lithium carbonate) the workers complained of nasal symptoms (sinus problems, nose bleeding, runny nose), a dry throat, headache and skin irritations. The severity of the symptoms and additional painful burns and irritations of the skin were observed in workers who were involved in the filling of LC (pH 11.2; person-related measurement 0.54-1,84 mg Li/m³ and in-patient measurement 0.46-0.51 mg Li/m³); these findings confirmed the occurrence of irritative effects after exposures to values as of 0.46 mg Li/m³ caused by LC. In a further study the serum lithium concentrations of workers who had been exposed to the substance via the air (0.070-0.475 mg Li/m³, 8 to 10-hour weighted average value) were 1,000 times lower than those of the lithium-treated patients. Persons who had been exposed to higher doses complained of weaker symptoms than those who had been exposed to lower doses, with the exception of diseases of the muscles, the skeleton and diabetes. [600, 7619]
Subacute exposure (4 to 8 weeks) to lithium chloride aerosols (1,9 mg Li/m³) in animal experiments did not cause effects on the lungs, including the macrophages; the upper respiratory tract was not examined. [7619]
Studies with LC on the long-term dermal toxicity of the substance are available neither from experiences with humans nor from animal experiments. [99998]
Lithium compounds (e.g., LC) have been used as an oral therapeutic agent for several decades as a prophylactic measure in case of psychological diseases, but due to the small therapeutic index, exposures can entail side effects after exposures to serum concentrations as low as 0.6 mmol Li/l (0.0042 mg Li/ml). These effects are characterised by vomiting, diarrhoea, disorders of the water and electrolyte balance, polyuria, nephrogenic diabetes insipidus (prevalence 25%), increased weight gain, increased values of the thyroid-stimulating hormone, hypothyroidism. Effects on the CNS, e.g., confusion, slight tremor, coordination and articulation disorders, hyperreflexia and ataxia, occur as exposures as of 1.5 mmol Li/l in the serum. Lithium concentrations of 1.5-2.5 mmol/l or 2.5-3.0 mmol/l cause moderate or severe toxicities, and 4,5 mmol Li/l in the serum are lethal for humans (kidney failure, coma, breathing regulation disorders and cardiac arrhythmias). [7619, 7978]
Animal experiments involving oral administration of LC and lithium chloride to rats, mice and dogs demonstrated that the kidneys (change in the proximal tubular cells, reversible diabetes insipidus), the thyroid gland (hypothyroidism) and the CNS (tremor) are the main target organs. [7619]
In a not completely documented 2-year study rats were administered lithium chloride in the drinking water (0, 20 and 50 mmol LiCl/l drinking water (corresponding to 0, 1.5-2 and 3-8 mmol Li/l plasma)). Animals in the highest dose group showed pronounced toxicity symptoms (muscle tics with simultaneous weight loss); all animals died within 2-3 weeks. A NOAEL of 84.8 mg LiCl per kg of body weight per day (corresponding to 13.9 mg Li per kg of body weight per day or 2 mmol Li/l plasma) was determined. [7520]

Reproductive toxicity, mutagenicity, carcinogenicity

For classifying the reproductive toxicity and mutagenic and carcinogenic potential see list in Annex VI of the CLP regulation / TRGS 905 / List of MAK values (see section REGULATIONS).
Reproductive toxicity
There is no reason to fear a risk of damage to the developing embryo or foetus when MAK and BAT values are observed.
Data pertaining to the developmental toxic potential of systemically available lithium ions on humans are inconsistent. It was observed that children of mothers who had been treated with lithium (details were not provided) during pregnancy had an increased relative risk to develop abnormalities (general, RR: 1.2) and cardiac abnormalities (RR: 3.5). Floppy infant syndrome occasionally occurred. Improvement of the symptoms commenced approx. 1-2 weeks following birth. [7619]
A retrospective cohort study investigated the neurological skills of 15 children (3-15 years) of women who had been treated with lithium-based psychological drugs during their pregnancies. One child exhibited minor neurological disorders (without further consequences). Most of the children reached lower values on IQ tests. Anomalies with regard to growth, behaviour and other developmental parameters were not determined. However, the study was of limited relevance (small cohort size, lack of a control group, possible application of further psychological drugs), and thus a final assessment of the neurotoxic potential of lithium was impossible. [7619]
Oral prenatal studies with LC involved developmental toxic effects (prenatal mortality and cleft palates) in the examined species (rats, mice, rabbits) only after exposures to doses that also caused toxic effects in the dams (mostly in the form of reduced gain in body weight). The NOAELs for developmental toxicity amounted to 5.6 mg Li per kg of body weight per day for rats, 37.6 mg Li per kg of body weight per day for mice and 14 mg Li per kg of body weight for rabbits (maternal toxicity 5.6 mg Li per kg of body weight for rats, 37.6 mg Li per kg of body weight per day for mice and 9 mg Li per kg of body weight per day for rabbits). [7619]
In a 2-year study (limited documentation) rats were administered lithium chloride with the drinking water. Administration of 20 mmol LiCl per litre of drinking water (corresponds to 1.5-2 mmol Li per l plasma) did not entail effects on the reproduction capacity (incidence and course of the pregnancies, lactation and malformations) and the health of the dams, nor on the health and the development of the offspring. Continuous exposure to lithium chloride entailed reduced growth of the offspring in comparison with the control animals, an effect that had been compensated when the animals were adult. [7520]
Studies on the postnatal developmental toxicity of lithium compounds show considerable insufficiencies and are thus not relevant for the classification. [7619]
When the workplace threshold values are observed, a foetotoxic potential of lithium compounds must altogether not be assumed due to the lower serum lithium concentrations of exposed workers. [99999]
Individual case reports and animal experiments provided indications of fertility impairments in the therapeutic dose range. Case reports showed that the sperm life capacity was reduced from 70% to 55% in patients who had been treated with LC. [600, 7619]
Oral application of LC also entailed impairments of the spermatogenesis (only one dose was examined). An increased percentage of abnormal sperms was observed in a subchronic feeding study with LC (BMDL (1SD) = 6.2 mg Li per kg of body weight). The number and quality of the data from case reports and animal experiments is altogether insufficient to permit final assessment of the impact on the fertility. [600, 7619]
Mutagenicity:
The available information is insufficient.
LC was positive in gene mutation tests on mammalian cells (HPRT). In further in-vitro cytogenicity studies (test on chromosome aberration test and micronucleus test) LC and lithium chloride caused the loss of chromosomes due to spindle disorders; they proved to possess a clastogenic potential. Valid in-vivo studies with comparable lithium salts (e.g., LC) on rats did not reveal such clastogenic potential. Further trials with regard to the observed spindle disorders were not conducted. Comparable lithium salts yielded negative results in in-vitro gene mutation trials. A classification into a category for germ cell-mutagenic agents on the basis of the available data is not necessary. [7619]
Carcinogenic potential:
The available information is insufficient.
Carcinogenicity studies with lithium compounds are not available. [99998] A growth-stimulating potential of lithium chloride in mammary gland cells was observed in in-vitro tests, but this potential was not confirmed in in-vivo tests on rats. A tumour-provoking potential of LC in rats that had been pretreated with N-nitrosourea or 7,12-dimethylbenz[a]anthracene in the form of tumour incidences or enlarged volumes of the mammary gland tumours was not observed. In an insufficiently documented and thus non-assessable animal experiment, the tumour incidence triggered by LC was 6 times higher in the test animals than in the control animals in comparison with n-butyl-n-(4-hydroxybutyl)nitrosamine-induced urinary bladder tumours. [7619]

Biotransformation and excretion

The distribution of the systemically available lithium ions ran slowly and unevenly, whereby, compared with the serum, higher concentrations were found in the kidneys, the bones, the thyroid gland, singular brain regions and the muscles. The distribution volume in humans ranges between 0.7 and 0.9 l per kg of body weight and after repeated administration the steady state is reached after 4 to 7 days. Lithium ions pass the placenta and enter the breast milk (in comparison with the maternal serum level, 50% is contained in the breast milk and, accordingly, 10% to 50% in the infant). An interaction with plasma proteins occurs only to a minor extent. Lithium ions can be transported via transport proteins of sodium and potassium to the interior of the cells. [600, 7619]
LC is not metabolised. [600, 7619]
After single, oral administration 95% of the lithium ions (detailed information was not provided) is eliminated via the kidneys, 4.5% via the sweat and less than 1% with the faeces. Elimination follows a biphasic course, in which 1 to 2 thirds is eliminated within the first 6 to 12 hours after application, and the remaining lithium is excreted in the following 10 to 14 days. The elimination half-life amounts to 12 to 27 hours (single application) and can be prolonged up to 58 hours in older humans or humans who undergo regular lithium applications. Up to 80% of free lithium ions that were filtered from the blood via glomeruli are re-absorbed in the proximal tubule, and therefore there is a correlation between the elimination of lithium and the glomerular filtration rate. [600, 7619]

Annotation

This occupational health information was compiled on 11.05.2018.
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.
[2001]

Skin

Remove contaminated clothing while protecting yourself.
Immediately rinse the affected skin areas with running water thoroughly.
Arrange for medical treatment.
[2001]

Respiratory tract

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.
[2001]

Swallowing

Rinse the mouth and spit the fluids out.
Have the casualty drink 1–2 glasses of water.
Arrange medical treatment.
[2001]

Information for physicians

- Symptoms of acute toxicity:
Eyes: local irritative potential, reddening, pain [8101, 2001]
Skin: Reddening [2001]
Inhalation: coughing, headache, nausea, sore throat [2001]
Ingestion: a hazardous ingestion dose cannot be determined. Depending on the (therapeutic) habituation, severe toxicities are triggered by even “minor” amounts, chiefly neurological, endocrine (e.g. impact on TSH and ADH) and cardiac reactions that can persist longer than the serum level indicates, nausea, vomiting [8101, 454, 10015]
Absorption: at plasma levels of 1.5–2.5 mmol/l: anorexia, dry mouth, nausea, vomiting, diarrhoea, tremor of the hands, muscle weakness, thirst, leucocytosis. Serum levels above 2.5mmol/l result in severe toxicity symptoms: fasciculations, muscle spasms, hyperreflexia, hypertension, drowsiness, confusion, epileptic seizures, hypotension, coma, collapse. Changes of the ECG (bradycardia, changes of the T waves) and of the EEG, polydipsia, polyuria, in rare cases nephrogenic diabetes insipidus, ulceration of the legs, exacerbation of acne and psoriasis, transient hyperglycaemia, itching and metallic taste can occur independent of the plasma level. Approx. 5% of the cases involve a (usually reversible) hypothyroidism. [454]

- Notes on first aid
After exposure of the eyes, the casualty should be examined by an ophthalmologist after thorough rinsing with water. [2110]
Ensure thorough rinsing of the contaminated skin areas with water. [2001]
After inhalation of larger amounts, 24 to 48-hour monitoring of the casualty is recommended, since a lung oedema might develop with some delay, further measures include application of a rapid-acting ß-2 sympathomimetic spray and inhalation of a muscarinic receptor antagonist such as ipratropium bromide. [2110, 10014]
After ingestion: primary removal of the pollutants through vomiting and/or gastric lavage only shortly after ingestion of larger amounts and under consideration of the state of consciousness. No activated charcoal due to insufficient adsorption.
Supply of isotonic saline solution and plenty of fluid (-› displacement of Li+ by Na+ from cells and promotion of diuresis). Fine tremor requires the administration of beta blockers (e.g. propranolol). Promotion of diuresis requires very careful handling of saluretic agents, do not use natriuretic agents (clearance is reduced through sodium deficiency and hypovolaemia), acetazolamide or theophylline appear to be the most suitable treatments.
Treatment of mild toxicities must concentrate on the symptoms (antiemetics against nausea and vomiting, infusion of isotonic saline solution). Colonic lavage with polyethylene glycol should be considered after absorption of large amounts, particularly in the form of extended release tablets. Severe toxicities might require intubation and ventilation of the casualty. Haemodialysis increases the lithium carbonate clearance and reduces the half-life. Performing haemodialysis should be considered in severe toxicity cases and must be decided on the basis of the clinical symptoms (e.g. in case of non-response to hydration, cardiac insufficiency, renal insufficiency). [454, 8101.10015, 2110]

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

Annotation
This first aid information was compiled on 22.10.2018.
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 | Organisational measures | Personal protection | Disposal considerations | Accidental release measures | Fire fighting measures

TECHNICAL MEASURES - HANDLING

Workplace
Provision of good ventilation in the working area.
Washing facility at the workplace required.

Eye bath required. These locations must be signposted clearly.

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.
Do not leave container open.
Sufficient ventilation must be guaranteed for refilling, transfer, or open use.
Avoid spillage.
Fill only into labelled container.
Avoid rising dust.

Cleaning and maintenance

Use protective equipment while cleaning if necessary.
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.
Alternative: clean damp.

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.
Keep container tightly closed.
Storage temperature: Without any limitation.
Store in a dry place.

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 stora-ge 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 non-combustible. Select fire and explosion prevention measures according to the other used substances.

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.

It must be assured that the workplace limit values are being maintained. If the limit values are exceeded, additional protection measures are necessary.

The measurements must be recorded and kept on file.

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

PERSONAL PROTECTION

Body protection

Wear an apron or a lab coat.

Respiratory protection

In an emergency (e.g.: unintentional release of the substance, exceeding the occupational exposure limit value) 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 glasses with side protection.

Hand protection

The use of resistant protective gloves is recommended.

Skin protection cremes do not protect as effectively against the substance as protective gloves. Therefore suitable protective gloves should be preferred as far as possible.

Ask the manufacturer for suitable materials.

Experience says that polychloroprene, nitrile rubber, butyl rubber, fluoro-caoutchouc, and polyvinyl chloride are suitable as glove materials for protection against un-dissolved solids.

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

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 inorganic solids.

Neutral solutions (pH-control):

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

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 personal protective equipment (see chapter Personal Protection).
Pick up without creating dust.
Afterwards ventilate area and wash spill site.

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

FIRE FIGHTING MEASURES

Instructions
Substance is incombustible. Select fire fighting measures according to the surrounding conditions.

Special protective equipment
In the case of inclusion in an ambient fire hazardous substances can be released.
Wear self-contained breathing apparatus.

REGULATIONS

GHS Classification/Labelling | Workplace labelling | Water hazard class | Air quality control | Transport Regulations | Threshold limit values | MAK recommendations | Technical rules | Regulations of accident insurers

EUROPEAN GHS CLASSIFICATION AND LABELLING

Classification
Acute toxicity, Category 4, oral; H302
Eye irritation, Category 2; H319

Signal Word "Warning"

Hazard Statement - H-phrases
H302: Harmful if swallowed.
H319: Causes serious eye irritation.

Precautionary Statement - P-phrases
P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear eye protection/face protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor 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.
P337+P313: If eye irritation persists: Get medical advice/attention.

Manufacturer's specification by Sigma-Aldrich

Reference: 01221
State: 2023

Checked: 2023

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

Precept label

Use safety goggles

GERMAN WATER HAZARD CLASS

Substance No: 2435

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 5.2.1 Overall Dust, including fine 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

TRGS 900 - GERMAN OCCUPATIONAL EXPOSURE LIMIT VALUES

0,2 mg/m³
with reference to the inhalable fraction

Peak limitation: Excursion factor 1

Duration 15 min, mean; 4 times per shift; interval 1 hour
Category I - Substances for which local irritant effects determine the exposure limit value, also respiratory allegens

There is no reason to fear a risk of damage to the developing embryo or foetus when AGW and BGW are adhered to.

Source: DFG

Scope:
Lithium compounds, inorganic, except more strongly irritant Lithium compounds

The occupational exposure limit value refers to the element content of the corresponding Metal.

RECOMMENDATIONS OF MAK-COMMISSION

This data is recommended by scientific experience and is not established law.

0,2 mg/m³
with reference to the inhalable fraction

Peak limitation: Excursion factor 1
Duration 15 min, mean; 4 times per shift; interval 1 hour
Category I - Substances for which local irritant effects determine the exposure limit value, also respiratory allegens

Pregnancy: Group C
There is no reason to fear damage to the embryo or foetus when MAK and BAT values are observed.

Lithium compounds, inorganic, except more strongly irritant Lithium compounds

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 402
Ermitteln und Beurteilen der Gefährdungen bei Tätigkeiten mit Gefahrstoffen: Inhalative Exposition; Ausgabe September 2023

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

REGULATIONS OF GERMAN ACCIDENT INSURERS

DGUV Regel 112-190
Benutzung von Atemschutzgeräten, Ausgabe November 2021
(in German only)

LINKS

The MAK Collection for Occupational Health and Safety
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: 00454
Hazardous Substances Data Bank (HSDB)

Quelle: 00600
The Nordic Expert Group for Criteria Documentation of Health Risk from Chemical and The Dutch Expert Committee Occupational Standards. Series.
Published e.c. in Arbete och Hälsa / Online

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: 01231
GHS-Sicherheitsdatenblatt, Thermo Fisher Scientific
GHS Material Safety Data Sheet, Thermo Fisher Scientific

Quelle: 02001
International Chemical Safety Cards (ICSC)

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: 02110
National Center for Biotechnology Information:
PubChem
https://pubchem.ncbi.nlm.nih.gov/

Quelle: 05300
TRGS 510 "Lagerung von Gefahrstoffen in ortsbeweglichen Behältern" Ausgabe Dezember 2020

Quelle: 05350
TRGS 900 "Arbeitsplatzgrenzwerte" Ausgabe Januar 2006, zuletzt geändert und ergänzt Juni 2023

Quelle: 06002
L. Roth, U. Weller
"Gefährliche Chemische Reaktionen" Loseblattsammlung mit Ergänzungslieferungen, ecomed-Verlag
("Dangerous chemical reactions" loose-leaf collection with supplement deliveries)

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Indication of the editor

Identification | Characterisation | Formula | Physical and chemical properties | Toxicology / Ecotoxikology | Occupational health and first aid | Safe handling | Regulations | Links | Literature register