IFA
Institut für Arbeitsschutz der
Deutschen Gesetzlichen Unfallversicherung

4-Dimethylaminoazobenzene-4'-sulfonic acid sodium salt

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

IDENTIFICATION

4-Dimethylaminoazobenzene-4'-sulfonic acid sodium salt
Methyl orange
Acid Orange 52
Helianthin
Orange III
4-(4-(Dimethylamino)phenylazo)benzenesulfonic acid sodium salt

ZVG No:	105039
CAS No:	547-58-0
EC No:	208-925-3

CHARACTERISATION

SUBSTANCE GROUP CODE

145600	Azo compounds and diazo compounds
144201	Amino compounds, aromatic (amino group on the ring)
147610	Sulphonates (salts)
122200	Sodium compounds

STATE OF AGGREGATION

The substance is solid.

PROPERTIES

crystalline powder
orange
faint odour

CHEMICAL CHARACTERISATION

Combustible substance, poorly flammable.
Slightly soluble in water.
Acute or chronic health hazards result from the substance.
(see: chapter REGULATIONS).

Substance information in Wikipedia

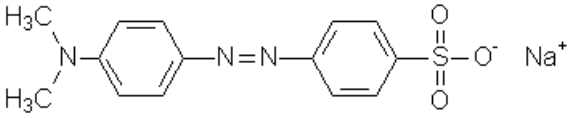
DUST EXPLOSIVENESS

Hints on the possibility of a dust explosion are not given for this substance. Nevertheless, finely dispersed combustible solids in a whirled up state always have to be considered as a subject of dust explosion.

Quelle: 01211

FORMULA

$C_{14}H_{14}N_3NaO_3S$



Molar mass: 327,33 g/mol

PHYSICAL AND CHEMICAL PROPERTIES

Melting point | Solubility |
pH-value

MELTING POINT

Melting point: › 300 °C

Reference: 01211 01221

SOLUBILITY IN WATER

Concentration: ca. 5 g/l

Temperature: 20 °C

Reference: 01211

pH-VALUE

pH-value: ca. 6,5

Temperature: 20 °C

Concentration: 5 g/l

Reference: 01211 01221

TOXICOLOGY / ECOTOXICOLOGY

TOXICOLOGICAL DATA

LD50 oral rat

Value: 60 mg/kg

Prehled Prumyslove Toxikologie; Organicke Latky, Marhold, J.Prague, Czechoslovakia, Avicenum, 1986Vol. -, Pg. 1306, 1986

Reference: 02071

OCCUPATIONAL HEALTH AND FIRST AID

Occupational health check

OCCUPATIONAL HEALTH CHECK

Prophylaxis offer: Occupational medical prevention has to be offered when, conducting activities with this substance, an exposure cannot be excluded.
Obligatory prophylaxis: The employer shall arrange occupational medical prophylaxis if, exerting activities with this substance, skin contact cannot be excluded.

Deadlines: Employees may exert activities with this substance only after participation in obligatory prophylaxis. Prophylaxis offer has to be made prior to taking up work. Deadlines for the inducement or proposal of regularly recurrent occupational medical prevention are to gather from the Occupational Health Rule (Arbeitsmedizinische Regel) "AMR Nummer 2.1".

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 very good ventilation in the working area.
Washing facility at the workplace required.
When handling excessive amounts of the substance an emergency shower is required.

Equipment
Use only closed apparatus.
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.
Use leak-proof equipment with exhaust for refilling or transfer.
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 a tested industrial vacuum cleaner or suction device.
Do not raise dust while cleaning.
Use of a blower for cleaning is not permitted.
Only conduct maintenance and other work on or in the vessel or closed spaces after obtaining written permission.

TECHNICAL MEASURES - STORAGE

Storage

Keep in locked storage or only make accessible to specialists or their authorised assistants.
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.
Place fragile vessels in break-proof outer vessels.
Keep container tightly closed in a dry and well-ventilated place.
Recommended storage temperature:
5 - 30 degree C.

Conditions of collocated storage

Storage class 6.1 C (Combustible, acutely toxic Cat. 3 or chronic effecting 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.
- Gases.
- Other explosive substances of storage class 4.1A.
- Strongly oxidizing substances of storage class 5.1A.
- Ammonium nitrate and preparations containing ammonium nitrate.
- 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):
- Pyrophoric substances.
- Substances liberating flammable gases in contact with water.
- Oxidizing substances of storage class 5.1B.

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.

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.
The number of employees who work with the hazardous substance must be kept to a minimum.
Observe the restrictions on juvenile employment as defined in the "Jugendarbeitsschutzgesetz".
Observe the restrictions on activities of pregnant women according to the the „Mutterschutzgesetz“ (German Maternity Protection Act)
Only employees are permitted to enter the work areas. Signposting to this effect must be displayed.

PERSONAL PROTECTION

Body protection

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

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 P3, 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 should 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.

The following materials are suitable for protective gloves:

Nitrile rubber/Nitrile latex - NBR

(0,11 mm)

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 inhalation of dust.

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

Before a break it might be necessary to change clothes.

Provide washrooms with showers and if possible rooms with separate storage for street clothing and work clothing.

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:

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

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

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.

Afterwards ventilate area and wash spill site.

Endangerment of watert:

The effects on water sources have not yet been classified. Yet escape into ground, lakes, or streams should be avoided under all circumstances. Inform responsible authorities in case of escape.

FIRE FIGHTING MEASURES

Suitable extinguishing media

Water (spray - not splash)

Dry extinguishing powder

Carbon dioxide

Foam

Instructions

Cool surrounding containers with water spray.
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.
Nitrous gases (nitric oxides)
Sulfur oxides
Carbon monoxide and carbon dioxide
Wear self-contained breathing apparatus and special tightly sealed suit.

REGULATIONS

GHS Classification/Labelling | Workplace labelling | Air quality control | Transport Regulations | SevesoIII | Technical rules | Regulations of accident insurers | Occupational health check

EUROPEAN GHS CLASSIFICATION AND LABELLING

Classification
Acute toxicity, Category 3, oral; H301

Signal Word "Danger"

Hazard Statement - H-phrases
H301: Toxic if swallowed.

Precautionary Statement - P-phrases
P301+P330+P331+P310: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

Manufacturer's specification by Sigma-Aldrich

Reference: 01221
State: 2019
Checked: 2021

GHS-CLASSIFICATION OF MIXTURES

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

Reference: 00001

WORKPLACE LABELLING ACCORDING TO GERMAN ASR A1.3

Prohibition label

No Smoking

No admittance for unauthorized persons

No eating and drinking

Warning label

Caution - toxic material

Precept label

Use safety goggles

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: 3143
Shipping name: Dye, solid, toxic, n.o.s. or dye intermediate, solid, toxic, n.o.s.
Hazard Identification Number: 60
Class: 6.1 (Toxic Substances)
Packing Group: III (low danger)
Danger Label: 6.1

Classification code: T2

Tunnel restrictions:
Passage forbidden through tunnels of category E.

Reference: 01221

DIRECTIVE 2012/18/EU (Seveso III)

The substance is subject to the hazard categories of the Hazardous Incident Ordinance:

H2	Acute toxic, Category 2 (all exposure routes) or Category 3 (inhalation exposure route) or Category 3 (oral route if neither acute inhalation toxicity classification nor acute dermal toxicity classification can be derived)

Quantity thresholds for determination of operation scopes:

Annex I Part 1 Section:	H2
Acute toxic	
Qualifying quantity for the application of	
Lower-tier requirements:	50 t
Upper-tier requirements:	200 t

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 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 Guideline 350-001 (BGG 904): Guidelines for occupational medical examinations
G 33 : Aromatic nitro and amino compounds

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: 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: 99999
Angabe des Bearbeiters
Indication of the editor

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