ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

Diquat ion

Revision Date:2024-12-21 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name	: Diquat ion
CBnumber	: CB0854999
CAS	: 2764-72-9
EINECS Number	: 220-433-0
Synonyms	: DIQUAT ION,6,7-DIHYDRODIPYRIDO[1,2-A:2',1'-C]PYRAZINEDIIUM

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	: For R&D use only. Not for medicinal, household or other use.
Uses advised against	: none

Company Identification

Company	: Chemicalbook
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 010-86108875

SECTION 2: Hazards identification

Classification of the substance or mixture

no data available

Label elements

Pictogram(s)

Signal word no data available

Hazard statement(s)

no data available

Precautionary statement(s)

Prevention

no data available

Response

no data available

Storage

no data available

Disposal

.

no data available

Other hazards

no data available

SECTION 3: Composition/information on ingredients

Substance

Product name	: Diquat ion
Synonyms	: DIQUAT ION,6,7-DIHYDRODIPYRIDO[1,2-A:2',1'-C]PYRAZINEDIIUM
CAS	: 2764-72-9
EC number	: 220-433-0
MF	: C12H12N2+2
MW	: 184.24

SECTION 4: First aid measures

Description of first aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms and effects, both acute and delayed

INHALATION: No appreciable vapor pressure. Prolonged contact with spray or mist may cause oral and nasal irritation. EYES: Irritation. SKIN: Irritation. INGESTION: Vomiting, diarrhea, general malaise. Possible kidney and liver damage, dyspnea, and pulmonary edema. With large doses there may be tremors or convulsions. OTHER: May be fatal if swallowed, inhaled, or absorbed through skin. (USCG, 1999)

Indication of any immediate medical attention and special treatment needed

Basic treatment: . Establish a patent airway. Suction if necessary. . Watch for signs of respiratory insufficiency and assist ventilations if necessary. . Administer oxygen by nonrebreather mask at 10 to 15 L/min. . Monitor for pulmonary edema and treat if necessary . . Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Cover skin burns with dry sterile dressings after decontamination . Bromine, methyl bromide, and related compounds

SECTION 5: Firefighting measures

Extinguishing media

Small Fire: Use dry chemical, CO2, water spray, or foam. Large Fire: Use water spray, fog or foam. Move containers from fire area if possible without risk. Fight fire from maximum distance. Dike fire control water for later disposal; do not scatter the material.

Specific Hazards Arising from the Chemical

Behavior in Fire: Decomposes at high temperature, charring rather than melting or boiling. (USCG, 1999)

Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours.Avoid contacting with skin and eye. Use personal protective equipment.Wear chemical impermeable gloves. Ensure adequate ventilation.Remove all sources of ignition. Evacuate personnel to safe areas.Keep people away from and upwind of spill/leak.

Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

In case of land spill absorb bulk liquid with fly ash or cement powder.

SECTION 7: Handling and storage

Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

It is generally not advisable to store undiluted diquat in contact with metals; undiluted material is best kept in original container.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	6,7-dihydrodipyrido[1,2-a:2',1'-c]pyrazinediylium
CAS No.	2764-72-9

	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m^3	ppm	mg/m^3
Belgium	?	0,5	?	?
Canada - Ontario	?	0,5	?	?
?	?	0,1 (1)	?	?
Denmark	?	0,5	?	1
?	?	0,1 (1)	?	0,2 (1)
Finland	?	0,5	?	1,5 (1)
New Zealand	?	0,5	?	?
Singapore	?	0,5 (1)	?	?
?	?	0,1 (2)	?	?
South Korea	?	0,5	?	?
Spain	?	0,5 inhalable aerosol	?	?
?	?	0,1 respirable aerosol	?	?
Switzerland	?	0,5 inhalable aerosol	?	?

	Remarks
Canada - Ontario	(1) Respirable aerosol
Denmark	(1) respirable fraction
Finland	(1) 15 minutes average value
Singapore	(1) total dust (2) respirable aerosol
Spain	skin

Biological limit values

no data available

Exposure controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Physical state	Diquat is a yellow crystalline solid dissolved in a liquid carrier. It is a water emulsifiable liquid. The primary hazard is the threat to the environment. Immediate steps should be taken to limit its spread to the environment. Since it is a liquid it can easily penetrate the soil and contaminate groundwater and nearby streams. It can cause illness by inhalation, skin absorption and/or ingestion. It is used as a herbicide.
Colour	Colorless to yellow crystals
Odour	no data available
Melting point/freezing point	less than 608° F (decomposes) (NTP, 1992)
Boiling point or initial boiling point and boiling range	no data available
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	greater than or equal to 100 mg/mL at 68° F (NTP, 1992)
Partition coefficient n-octanol/water	log Kow = -4.60
Vapour pressure	2.08E-06mmHg at 25°C
Density and/or relative density	1.22 to 1.27 at 68° F (USCG, 1999)
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

Reactivity

Water soluble. Solutions are stable in neutral and acid solutions; however, they are unstable in alkaline solutions.

Chemical stability

Under normal storage conditions, in original containers, shelf life is indefinitely long; dry chem sensitive to UV light.

Possibility of hazardous reactions

Diquat does not burn or burns with difficulty.DIQUAT is light sensitive. This compound can corrode aluminum and other metals. (NTP, 1992) Quaternary ammonium salts often serve as catalysts in reactions. They are incompatible with many strong oxidizers and reducing agents, such as metal hydrides, alkali/active metals, and organometallics. Unlike the ammonium ion, [NH4]+, and the primary, secondary, or tertiary ammonium cations, the quaternary ammonium cations are permanently charged, independent of the pH of their solution.

Conditions to avoid

no data available

Incompatible materials

Alkalis, UV light, basic solutions [Note: Concentrated diquat solutions corrode aluminum].

Hazardous decomposition products

When heated to decomposition, diquat dibromide emits very toxic fumes of /nitrogen oxides and hydrogen bromide/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Cow oral 30 mg/kg
- Inhalation: no data available
- Dermal: LD50 Rabbit percutaneous >750 mg/kg

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Cancer Classification: Group E Evidence of Non-carcinogenicity for Humans

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

Toxicity

Toxicity to fish: LC50 Pimephales promelas 14000 mg/l 96-hr

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

Diquat dibromide is listed as being a chemical which is unlikely to be removed during biological sewage treatment, even after prolonged exposure of the microorganisms(1). However microorganisms are capable of degrading diquat dibromide(2) and biodegradation occurs in various sediment-water systems as is evidenced by the cumulative production of CO2 in these systems(3); the rate of degradation is very slow. After 65 days, only 0.88 and 0.21% of the diquat dromide was converted to CO2 under aerobic and anaerobic conditions using water and sediment from a eutrophic lake and negligible using water and sediment from an oligotrophic lake(3). Diquat dibromide adsorbed on the internal faces of montmorillonite clay in aqueous soil-nutrient solution was not degraded by microorganisms over a one year period(4). When adsorbed in the interlayer spacings of the clay, the compound probably persists indefinitely in its original form, although in a biologically inactive state(4).

Bioaccumulative potential

A BCF range of <0.6 to 1.4 was measured for diquat dibromide(1). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC). No bioaccumulation in fish was reported using a microcosm(3). No residues were detected in organs or tissues of channel catfish collected from pools 5 months after a single application or 2 months after a second treatment of 1 ppm diquat(4).

Mobility in soil

Diquat dirbomide exhibits strong adsorption to soils(1). Using a structure estimation method based on molecular connectivity indices(2), the Koc for diquat dibromide can be estimated to be 2,000(SRC). According to a classification scheme(3), this estimated Koc value suggests that diquat dibromide is expected to have slight mobility in soil. The Rf value, from thin-layer chromatography on soil plates, for this compound falls in the range of 0-0.09, which indicates no mobility(4). Diquat dibromide is an organic divalent cation(5) and cations generally adsorb to organic carbon and clay more strongly than their neutral counterparts(6).

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: no data available

IMDG: no data available

IATA: no data available

UN Proper Shipping Name

ADR/RID: no data available

IMDG: no data available

IATA: no data available

Transport hazard class(es)

ADR/RID: no data available

IMDG: no data available

IATA: no data available

Packing group, if applicable

ADR/RID: no data available

IMDG: no data available

IATA: no data available

Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Not Listed.

China Catalog of Hazardous chemicals 2015

Not Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

PICCS

Not Listed.

Vietnam National Chemical Inventory

Not Listed.

IECSC

Not Listed.

Korea Existing Chemicals List (KECL)

Not Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/