

## 1. IDENTIFICATION OF THE SUBSTANCE

**Product name:** Diquat 40% Technical

**Company Identification:**

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## 2. HAZARD IDENTIFICATION

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**

Acute toxicity, Inhalation (Category4) H332

Acute toxicity, Oral (Category 4) H302

Serious eye irritation (Category 2) H319

Specific target organ toxicity — repeated exposure (Category 1) H372

Specific target organ toxicity — single exposure (Category 3) H335

Skin irritation (Category 2) H315

Hazardous to the aquatic environment (Aquatic Acute Category 1) H400

Hazardous to the aquatic environment (Aquatic Chronic Category 1) H410

### 2.2 Label elements

**Labelling according Regulation (EC) No 1272/2008 [CLP]**

Pictogram



Signal word

Danger

**Hazard statement(s)**

H332: Harmful if inhaled.

H372: Causes damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

H302: Harmful if swallowed

H319: Causes serious eye irritation

H335: May cause respiratory irritation

H315: Causes skin irritation

H400: Very toxic to aquatic life

H410: Very toxic to aquatic life with long lasting effects.

**Precautionary statement(s)**

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P270 Do not eat, drink or smoke when using this product.

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P273 Avoid release to the environment.

P284 Wear respiratory protection.

**Response statement(s)**

P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P314 Get medical advice/attention if you feel unwell.

P362 Take off contaminated clothing and wash before reuse.

P302+352 IF ON SKIN: Wash with plenty of soap and water.

P332+313 If skin irritation occurs, Get medical advice/attention.

P301+312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P330 Rinse mouth.

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+313 If eye irritation persists, Get medical advice/attention.

P391 Collect spillage.

P310 Immediately call a POISON CENTER or doctor/physician.

P320 Specific treatment is urgent.

P312 Call a POISON CENTER or doctor/physician if you feel unwell.

P321 Specific treatment.

**Storage and Disposal statement(s)**

P403+233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulation.

**Supplemental Hazard**

Statements none

Restricted to professional users.

**2.3 Other hazards - none**

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical name: 1,1'-ethylene-2,2'-bipyridyldiylidium dibromide

Formula: C<sub>12</sub>H<sub>12</sub>N<sub>2</sub>Br<sub>2</sub>

Hazardous ingredients:

| Ingredient Name   | CAS Number | Concentration (w/w) |
|-------------------|------------|---------------------|
| Diquat Dibromide  | 85-00-7    | 40% Min.            |
| Inert Ingredients | -          | 60% Max.            |

**4. FIRST AID MEASURES**

**4.1 Description of first aid measures**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**

Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel.

**In case of skin contact**

Immediately remove contaminated clothing and wash skin, hair and fingernails thoroughly with soap and water. Flush skin with plenty of water for 15-20 minutes.

**In case of eye contact**

Flush eyes with clean water, holding eyelids apart for a minimum of 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye.

**If swallowed**

If swallowed, immediately contact a poison control centre, doctor or nearest hospital for treatment advice. Have person sip a glass of water if able to swallow. Do not give anything by mouth to an unconscious person. Do not induce vomiting unless directed by a physician or a poison control center. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer water.

**4.2 Most important symptoms and effects, both acute and delayed**

No data available.

**4.3 Indication of any immediate medical attention and special treatment needed**

To be effective, treatment for diquat poisoning must begin immediately. Treatment consists of binding diquat in the gut with suspensions of activated charcoal or bentonite clay, administration of cathartics to enhance elimination, and removal of diquat from blood by charcoal hemoperfusion.

**5. FIRE-FIGHTING MEASURES**

**5.1 Extinguishing media**

**Suitable extinguishing media**

Use foam, carbon dioxide, dry powder or halon extinguishant.

**5.2 Special hazards arising from the substance or mixture**

Carbon dioxide, carbon monoxide and, irritating and/or toxic gases, vapours or smoke.

**5.3 Advice for firefighters**

Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. Contain run-off water with, for example, temporary earth barriers.

**5.4 Further information**

no data available

**6. ACCIDENTAL RELEASE MEASURES**

**6.1 Personal precautions, protective equipment and emergency procedures**

Make sure all personnel involved in the spill cleanup follow good industrial hygiene practices. A small spill can be handled routinely. Wear suitable protective clothing and eye protection to prevent skin and eye contact. Use adequate ventilation and wear equipment and clothing as described in Section 8 and/or the product label.

**6.2 Environmental precautions**

Control the spill at its source. Contain the spill to prevent from spreading or contaminating soil or from entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Sections 7 and 8. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposal. Spillages or uncontrolled discharges into watercourses must be reported to the appropriate regulatory authority.

**6.3 Methods and materials for containment and cleaning up**

Pump or scoop large amounts of liquid into a disposable container. Absorb remaining liquid or smaller spills with clay, sand or vermiculite. Scoop or sweep up material and place into a disposal container. Wash area with detergent and water. Pick up wash liquid with additional absorbent and place into compatible disposal container. On soils, small amounts will naturally decompose. For large amounts, skim off the upper contaminated layer and collect for disposal.

Deactivating Chemicals: Bentonite, Fuller's Earth, Activated Charcoal.

**7. HANDLING AND STORAGE****7.1 Precautions for safe handling**

Keep out of reach of children. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Avoid breathing vapours or spray mist. If the concentrate is spilled and allowed to stand, it can dry to a highly irritating dust. Wear full protective clothing and equipment (see Section 8). After work, rinse gloves and remove protective equipment, and wash hands thoroughly with soap and water after handling, and before eating, tobacco use, drinking, applying cosmetics or using the toilet. Wash contaminated clothing before re-use and separate from household laundry. Keep containers closed when not in use. Protect product, wash or rinse water, and contaminated materials from uncontrolled release into the environment, or from access by animals, birds or unauthorized people.

**7.2 Conditions for safe storage, including any incompatibilities**

This product reacts with aluminum to produce flammable hydrogen gas. Do not mix or store in containers or systems made of aluminum or having aluminum fittings. Store in original container only in a well-ventilated, cool, dry, secure area. Protect from heat, sparks and flame. Do not expose sealed containers to temperatures above 40 °C. Keep separate from other products to prevent cross contamination. Rotate stock. Clean up spilled material immediately. Do not store product below 0°C – avoid freezing product during winter storage.

**7.3 Specific end uses**

no data available

**8. EXPOSURE CONTROL/PERSONAL PROTECTION****8.1 Components with workplace control parameters**

| omponents | CAS-No. | Control parameters                     | Update | Basis |
|-----------|---------|--|--------|-------|
| Diquat    | 85-00-7 | 0.5 mg/m <sup>3</sup> TWA (inhalable); |        | ACGIH |

|           |  |  |  |     |
|-----------|--|--|--|-----|
| dibromide |  | 0.1 mg/m <sup>3</sup> TWA (respirable), skin |  | TLV |
|-----------|--|--|--|-----|

### 8.2 Appropriate engineering controls

Ensure work areas have ventilation, containment, and procedures sufficient to maintain airborne levels below the threshold limit value. Warehouses, production area, parking lots and waste holding facilities must have adequate containment to prevent environmental contamination. Provide separate shower and eating facilities.

### 8.3 Personal protective equipment

General: Avoid breathing dust, vapours or aerosols. Avoid contact with eye, skin and clothing. Wash thoroughly after handling and before eating, drinking, applying cosmetics or handling tobacco.

#### Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

#### Skin protection

Where contact is likely, wear chemical-resistant gloves (such as nitrile or butyl), coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.

#### Respiratory protection

A respirator is not normally required when handling this substance. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. A NIOSH-certified combination air-purifying respirator with an N, P or R 95 or HE class filter and an organic vapour cartridge may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a pressure demand atmosphere-supplying respirator if there is any potential for uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

- a) Appearance                      brown liquid
- b) Vapour pressure                 $6.75 \times 10^{-3}$  mPa or  $5.06 \times 10^{-8}$  mmHg
- c) PH                                 N/A
- d) Solubility                        300.60g/l in water(pH 5.02, 20°C), 0.11 g/l in acetone (20°C) , 37.97 g/l in methanol (20°C)
- e) Partition coefficient            noctanol /water log Kow=-4.6 (pH 5.48, 20°C)
- f) Boiling point                    102.7°C (715 mmHg)
- g) Melting point (°C)             Decomposes before melting
- h) Degradation point (°C)       325
- i) Flashpoint (°C)                Not expected to self ignite; Not highly flammable
- j) Bulk density (g ml<sup>-1</sup>)           1.61
- k) Henry's law constant at 25°C (Pa m<sup>3</sup>mol<sup>-1</sup>)  $5.00 \times 10^{-12}$
- l) Surface tension (mN m<sup>-1</sup>)     N/A

**10. STABILITY AND REACTIVITY****10.1 Reactivity**

Corrosive to most metals including zinc, aluminium and mild steel.

**10.2 Chemical stability**

Stable

**10.3 Possibility of hazardous reactions**

no data available

**10.4 Conditions to avoid**

Concentrate should not be stored in aluminum containers. This product reacts with aluminum to produce flammable hydrogen gas. Do not mix or store in containers or systems made of aluminum or having aluminum fittings. Spray solutions should not be mixed, stored or applied in containers other than plastic, plastic-lined steel, stainless steel or fiberglass.

**10.5 Incompatible materials**

Strong alkalis and anionic wetting agents (e.g., alkyl and alkylaryl sulfonates). Corrosive to aluminum.

**10.6 Hazardous decomposition products**

Combustion or thermal decomposition will evolve toxic and irritant vapors.

**11. TOXICOLOGICAL INFORMATION****Acute toxicity**

Oral LD<sub>50</sub> (rat): cut-off value 500 mg/kg for female.

Dermal LD<sub>50</sub> (rat): ≥4000 mg/kg for male and female.

Inhalation: <1.107mg/L

**Skin corrosion/irritation**

Cause slightly irritant to rabbit skin.

**Serious eye damage/eye irritation**

Cause minimal irritant to rabbit eyes.

**Respiratory or skin sensitization**

No skin irritation in guinea pigs

**Germ cell mutagenicity**

No mutagenic potential activity in mice.

**Carcinogenicity**

No evidence of carcinogenicity in rat and mouse studies.

**Reproductive toxicity**

No data available.

**Specific target organ toxicity - single exposure**

Inhalation - May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure**

Ingestion - Causes damage to organs through prolonged or repeated exposure.

**Aspiration hazard**

No data available.

**12. ECOLOGICAL INFORMATION** (based on active ingredient)**12.1 Toxicity**

**Birds** Acute oral LD<sub>50</sub> (12 d) for mallard ducks 71 mg diquat ion/kg; acute oral LD<sub>50</sub> (14 d) for partridges 158 mg diquat ion/kg.

**Fish** LC<sub>50</sub> (96 h) for rainbow trout 6.1 mg diquat ion/l.

**Fish** - Chronic 21 day NOEC, 220 µg diquat ion/l.

**Daphnia** LC<sub>50</sub> (48 h) 1.2 µg diquat ion/l.

**Algae** EC<sub>50</sub> (96 h) for *Pseudokirchneriella subcapitata* 11 µg diquat ion/l.

Algae - Chronic (96 h) NOEC, 6.8 µg diquat ion/l.

**Bees** LD<sub>50</sub> (oral, 120 h) 13 µg diquat ion/bee.

**Worms** LC<sub>50</sub> (14 d) 130 mg diquat ion/kg dry weight.

**12.2 Persistence and degradability**

Rapidly degraded by soil micro-organisms, DT<sub>50</sub> of unadsorbed diquat <1 w; strong binding in soil increases persistence. Strongly bound and inactivated by soil and aquatic sediments and does not leach into groundwater; [Koc](#) >10 000.

**12.3 Bioaccumulative potential**

Low potential to bioaccumulate.

**12.4 Mobility in soil**

Immobile in soil and will not leach.

**12.5 Other adverse effects**

Sorption: Extremely tightly adsorbed to (negatively-charged) soil particles due to its dicationic nature. Diquat is primarily adsorbed to clay, less so to OM. Diquat bound to soil is unavailable for plant uptake and is largely unavailable to soil microbes.

**13. DISPOSAL CONSIDERATIONS****13.1 Product**

Industrial/commercial waste may be handled at licensed facilities only. Waste shipments must be securely packaged and properly labelled. Only licensed carriers may be used, and proper documents must accompany the shipment.

**13.2 Contaminated packaging**

Container Disposal: Do not contaminate ponds, waterways or ditches with chemical or used containers. Surplus material must be disposed of as detailed in the 'Guidelines for the avoidance, limitation and disposal of pesticide waste on the farm' GCPF, 1987. Empty containers should be washed and discarded. Empty containers should not be used for other purposes. Disposal should be in accordance with local, state or national legislation.

**14. TRANSPORT INFORMATION****14.1 UN number**

ADR/RID: 1760

IMDG: 1760

IATA: 1760

**14.2 UN proper shipping name**

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ADR/RID: Corrosive Liquid Toxic, N.O.S. (Diquat dibromide)

IMDG: Corrosive Liquid Toxic, N.O.S. (Diquat dibromide)

IATA: Corrosive Liquid Toxic, N.O.S. (Diquat dibromide)

#### 14.3 Transport hazard class(es)

ADR/RID: 8

IMDG: 8

IATA: 8

#### 14.4 Packaging group

ADR/RID: III

IMDG: III

IATA: III

#### 14.5 Environmental hazards

ADR/RID: yes

IMDG: yes

IATA: yes

#### 14.6 Special precautions for user

no data available

### 15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of GHS Regulation (EC) No 1272/2008 [EU-GHS/CLP]. Local regulations, if any should be applied to classification and labeling.

### 16. OTHER INFORMATION

This information is provided in good faith but without express or implied warranty. Buyer assumes all responsibility for safety and use not in accordance with label instruction.