

Safety Data Sheet

According to U.S.A. Federal Hazcom 2012 and Canadian HPR - WHMIS 2015

1. Identification

1.1. Product identifier

Code **DPD1**
 Product name **Chlorine Reagent 1**

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

Intended use **Determination of Free and Total Chlorine in Water Samples.**

1.3. Details of the supplier of the safety data sheet

Name **Milwaukee Electronics Kft.**
 Full address **Alsóikötő sor 11.**
 District and Country **H6726 Szeged**
Hungary
 Tel. **+36-62-428-050**
 Fax **+36-62-428-051**

e-mail address of the competent person responsible for the Safety Data Sheet **info@milwaukeeinst.com**

Product distribution by: **Milwaukee Instruments, Inc.- 2950 Business Park Drive - Rocky Mount - NC 27804 - U.S.A. - Technical Service Contact Information: +1 252 443 3630, fax number 252.443.1937 - e-mail: sales@milwaukeeinstruments.com**

1.4. Emergency telephone number

For urgent inquiries refer to **USA Emergency Contact Information: +1-800-424-9300 - CHEMTREC 24 hours/365 days**

2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200). The product thus requires a safety datasheet. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Classification and Hazard Statement

Substance or mixture corrosive to metals, category 1	May be corrosive to metals.
Skin corrosion, category 1	Causes severe skin burns and eye damage.
Serious eye damage, category 1	Causes serious eye damage.

Hazard pictograms:



Signal words: **Danger**

Hazard statements:

H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements:

Prevention:

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

Response:

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / shower.

2. Hazards identification ... / >>

P305+P351+P338

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

P310

Immediately call a POISON CENTER or doctor.

P390

Absorb spillage to prevent material damage.

Storage: --

Disposal: --

2.2. Other hazards

Information not available

3. Composition/information on ingredients

3.2. Mixtures

Contains:

Identification

x = Conc. %

Classification:

SULPHURIC ACID

CAS 7664-93-9 9 ≤ x < 15

Substance or mixture corrosive to metals, category 1 H290, Skin corrosion, category 1A H314, Serious eye damage, category 1 H318

EC 231-639-5

INDEX 016-020-00-8

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

CAS 6283-63-2 1 ≤ x < 5

Acute toxicity, category 4 H302

EC 228-500-6

INDEX

* There is a batch to batch variation.

The full wording of hazard (H) phrases is given in section 16 of the sheet.

4. First-aid measures

4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

SKIN: Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

INGESTION: Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

INHALATION: Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

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

Specific information on symptoms and effects caused by the product are unknown.

SULPHURIC ACID

SULPHURIC ACID 98%: Irritation and corrosion, Cough, Shortness of breath, Nausea, Vomiting, Diarrhoea, Pain, Risk of blindness.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Irritant effects. The following applies to aromatic amines in general: systemic effect: methaemoglobinaemia with headache, cardiac dysrhythmia, drop in blood pressure, dyspnoea, and spasms, principal symptom: cyanosis (blue discolouration of the blood).

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

Information not available

5. Fire-fighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT

The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.

UNSUITABLE EXTINGUISHING EQUIPMENT

5. Fire-fighting measures ... / >>

None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products.

SULPHURIC ACID

SULPHURIC ACID 98%: Not combustible, Fire may cause evolution of Sulphur oxides.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Combustible. Development of hazardous combustion gases or vapours possible in the event of fire. Fire may cause evolution of: nitrous gases, nitrogen oxides, Sulphur oxides.

5.3. Advice for firefighters

GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.

Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

7. Handling and storage

7.1. Precautions for safe handling

Ensure that there is an adequate earthing system for the equipment and personnel. Avoid contact with eyes and skin. Do not breathe powders, vapours or mists. Do not eat, drink or smoke during use. Wash hands after use. Avoid leakage of the product into the environment.

7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Store in a ventilated and dry place, far away from sources of ignition. Keep containers well sealed. Keep the product in clearly labelled containers. Avoid overheating. Avoid violent blows. Keep containers away from any incompatible materials, see section 10 for details.

7.3. Specific end use(s)

Information not available

8. Exposure controls/personal protection

8.1. Control parameters

Regulatory References:

USA	NIOSH-REL	NIOSH publication No. 2005-149, 3th printing, 2007.
USA	OSHA-PEL	Occupational Exposure Limits - Limits for Air Contaminants TABLE Z-1-1910.1000.
USA	CAL/OSHA-PEL	California Division of Occupational Safety and Health (Cal-OSHA) Permissible Exposure Limits (PELs).
EU	OEL EU	Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 91/322/EEC.
	TLV-ACGIH	ACGIH 2019

SULPHURIC ACID

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min	
		mg/m3	ppm	mg/m3	ppm
OEL	EU	0.05			
TLV-ACGIH	-	0.2			
OSHA	USA	1			
CAL/OSHA	USA	0.1		3	
NIOSH	USA	1			

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

SULPHURIC ACID

Methods for measurement of the workplace atmosphere have to correspond to the requirements of norm OSHA ID-113.

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration. Personal protective equipment must comply with current regulations.

HAND PROTECTION

Protect hands with category III work gloves (OSHA 29 CFR 1910.138).

The following should be considered when choosing work glove material: compatibility, degradation, failure time and permeability.

The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.

SKIN PROTECTION

Wear category I professional long-sleeved overalls and safety footwear. Wash body with soap and water after removing protective clothing.

EYE PROTECTION

Wear airtight protective goggles (OSHA 29 CFR 1910.133).

RESPIRATORY PROTECTION

If the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, wear a mask with a NIOSH certified filter, whose class must be chosen according to the limit of use concentration (NIOSH 42 CFR 84, OSHA 29 CFR 1910.134). In the presence of gases or vapours of various kinds and/or gases or vapours containing particulate (aerosol sprays, fumes, mists, etc.) combined filters are required.

Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.

If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus or external air-intake breathing apparatus. For a correct choice of respiratory protection device, see standard NIOSH 42 CFR 84, OSHA 29 CFR 1910.134.

ENVIRONMENTAL EXPOSURE CONTROLS

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	liquid	
Colour	colourless	
Odour	odourless	
Odour threshold	Not available	
pH	0.2	

9. Physical and chemical properties ... / >>

Melting point / freezing point	Not available
Initial boiling point	Not available
Boiling range	Not available
Flash point	Not applicable
Evaporation rate	Not available
Flammability (solid, gas)	Not available
Lower inflammability limit	Not available
Upper inflammability limit	Not available
Lower explosive limit	Not available
Upper explosive limit	Not available
Vapour pressure	Not available
Vapour density	Not available
Relative density	1.07
Solubility	soluble in water
Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
Explosive properties	not applicable
Oxidising properties	not applicable

9.2. Other information

Total solids (250°C / 482°F)	11,48 %
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10. Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

SULPHURIC ACID

SULPHURIC ACID 98%: Decomposes at 450°C/842°F, has a corrosive effect, strong oxidising agent.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

SULPHURIC ACID

SULPHURIC ACID 98%: Stable under standard ambient condition.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Sensitive to moisture, Sensitivity to light.

10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

SULPHURIC ACID

SULPHURIC ACID 98%: Violent reactions possible with: Water, Alkali metals, alkali compounds, Ammonia, Aldehydes, acetonitrile, Alkaline earth metals, alkalines, Acids, alkaline earth compounds, Metals, metal alloys, Oxides of phosphorus, phosphorus, hydrides, halogen-halogen compounds, oxyhalogenic compounds, permanganates, nitrates, carbides, combustible substances, organic solvent, acetylidene, Nitriles, organic nitro compounds, anilines, Peroxides, picrates, nitrides, lithium silicide, iron(III) compounds, bromates, chlorates, Amines, perchlorates, hydrogen peroxide.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Violent reactions possible with: Strong oxidizing agents.

10.4. Conditions to avoid

None in particular. However the usual precautions used for chemical products should be respected.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Strong heating (decomposition).

10.5. Incompatible materials

SULPHURIC ACID

SULPHURIC ACID 98%: Animal/vegetable tissues, Metals. Contact with metals liberates hydrogen gas.

10. Stability and reactivity ... / >>

10.6. Hazardous decomposition products

SULPHURIC ACID
 SULPHURIC ACID 98%: Sulphur oxide.

11. Toxicological information

In the absence of experimental data for the product itself, health hazards are evaluated according to the properties of the substances it contains, using the criteria specified in the applicable regulation for classification.
 It is therefore necessary to take into account the concentration of the individual hazardous substances indicated in section 3, to evaluate the toxicological effects of exposure to the product.

11.1. Information on toxicological effects

SULPHURIC ACID
 SULPHURIC ACID 98% - Skin irritation: causes severe burns - Eye irritation: causes serious eye damage, risk of blindness!

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE
 Acute inhalation toxicity, Symptoms: Irritation symptoms in the respiratory tract - Skin irritation, slight irritation - Sensitisation, Sensitisation possible in predisposed persons.

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

ACUTE TOXICITY

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE
 LD50 (Oral) > 497 mg/kg Rat

SULPHURIC ACID
 LD50 (Oral) 2140 mg/kg Rat

SKIN CORROSION / IRRITATION

Corrosive for the skin
 Classification according to the experimental Ph value

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

CARCINOGENICITY

Does not meet the classification criteria for this hazard class

REPRODUCTIVE TOXICITY

11. Toxicological information ... / >>

Does not meet the classification criteria for this hazard class

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

STOT - REPEATED EXPOSURE

Does not meet the classification criteria for this hazard class

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

12. Ecological information

Use this product according to good working practices. Avoid littering. Inform the competent authorities, should the product reach waterways or contaminate soil or vegetation.

12.1. Toxicity

SULPHURIC ACID

LC50 - for Fish 42 mg/l/96h *Gambusia affinis*

EC50 - for Crustacea 42.5 mg/l/48h

EC50 - for Algae / Aquatic Plants > 100 mg/l/72h

12.2. Persistence and degradability

SULPHURIC ACID

Solubility in water 1000 - 10000 mg/l

Degradability: information not available

12.3. Bioaccumulative potential

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Partition coefficient: n-octanol/water, log Pow: 2.24 (calculated), (Lit.) Bioaccumulation is not expected.

12.4. Mobility in soil

Information not available

12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

12.6. Other adverse effects

SULPHURIC ACID

SULPHURIC ACID 98%: Biological effect: Forms corrosive mixture with water even if diluted, Harmful effect due to pH shift, Endangers drinking-water supplies if allowed to enter soil or water, Discharge into the environment must to be avoid.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE

Discharge into the environment must be avoided.

13. Disposal considerations

13.1. Waste treatment methods

Reuse, when possible. Neat product residues should be considered special non-hazardous waste.
 Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.
CONTAMINATED PACKAGING
 Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

14. Transport information

14.1. UN number

ADR / RID, IMDG, IATA: 3264

14.2. UN proper shipping name

ADR / RID: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (SULFURIC ACID) MIXTURE
 IMDG: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (SULFURIC ACID) MIXTURE
 IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (SULFURIC ACID) MIXTURE

14.3. Transport hazard class(es)

ADR / RID: Class: 8 Label: 8



IMDG: Class: 8 Label: 8



IATA: Class: 8 Label: 8



14.4. Packing group

ADR / RID, IMDG, IATA: III

14.5. Environmental hazards

ADR / RID: NO
 IMDG: NO
 IATA: NO

14.6. Special precautions for user

ADR / RID:	HIN - Kemler: 80	Limited Quantities: 5 L	Tunnel restriction code: (E)
	Special Provision: -		
IMDG:	EMS: F-A, S-B	Limited Quantities: 5 L	
IATA:	Cargo:	Maximum quantity: 60 L	Packaging instructions: 856
	Pass.:	Maximum quantity: 5 L	Packaging instructions: 852
	Special Instructions:	A3, A803	

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Information not relevant

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Federal Regulations

Clean Air Act Section 112(b):
 No component(s) listed.

15. Regulatory information ... / >>

Clean Air Act Section 602 Class I Substances:
No component(s) listed.

Clean Air Act Section 602 Class II Substances:
No component(s) listed.

Clean Water Act – Priority Pollutants:
No component(s) listed.

Clean Water Act – Toxic Pollutants:
No component(s) listed.

DEA List I Chemicals (Precursor Chemicals):
No component(s) listed.

DEA List II Chemicals (Essential Chemicals):
No component(s) listed.

EPA List of Lists:
313 Category Code:
7664-93-9 SULPHURIC ACID

EPCRA 302 EHS TPQ:
7664-93-9 SULPHURIC ACID

EPCRA 304 EHS RQ:
7664-93-9 SULPHURIC ACID

CERCLA RQ:
7664-93-9 SULPHURIC ACID

EPCRA 313 TRI:
7664-93-9 SULPHURIC ACID

RCRA Code:
No component(s) listed.

CAA 112 (r) RMP TQ:
No component(s) listed.

State Regulations

Massachusetts:
7664-93-9 SULPHURIC ACID

Minnesota:
7664-93-9 SULPHURIC ACID

New Jersey:
7664-93-9 SULPHURIC ACID

New York:
7664-93-9 SULPHURIC ACID

Pennsylvania:
7664-93-9 SULPHURIC ACID

California:
7664-93-9 SULPHURIC ACID

Proposition 65:
This product does not contain any substances known to the State of California to cause cancer, reproductive harm or birth defects.

International Regulations
Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:
None

Substances subject to the Rotterdam Convention:
None

15. Regulatory information ... / >>

Substances subject to the Stockholm Convention:
 None

Canadian WHMIS
 Information not available

16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.

LEGEND:

- 313 CATEGORY CODE: Emergency Planning and Community Right-to Know Act Section 313 Category Code
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAA 112 @ RMP TQ: Risk Management Plan Threshold Quantity (Clean Air Act Section 112@)
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CERCLA RQ: Reportable Quantity (Comprehensive Environment Response, Compensation, and Liability Act)
- CLP: EC Regulation 1272/2008
- DEA: Drug Enforcement Administration
- EmS: Emergency Schedule
- EPA: US Environmental Protection Agency
- EPCRA: Emergency Planning and Community Right-to Know Act
- EPCRA 302 EHS TPQ: Extremely Hazardous Substance Threshold Planning Quantity (Section 302 Category Code)
- EPCRA 304 EHS RQ: Extremely Hazardous Substance Reportable Quantity (Section 304 Category Code)
- EPCRA 313 TRI: Toxics Release Inventory (Section 313 Category Code)
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PEL: Predicted exposure level
- RCRA Code: Resource Conservation and Recovery Act Code
- REL: Recommended exposure limit
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TSCA: Toxic Substances Control Act
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- WHMIS: Workplace Hazardous Materials Information System.

GENERAL BIBLIOGRAPHY:

- GHS rev. 3
- The Merck Index. 10th Edition
- Handling Chemical Safety
- Niosh - Registry of Toxic Effects of Chemical Substances
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy
- 6 NYCRR part 597
- Cal/OSHA website
- California Safe Drinking Water and Toxic Enforcement Act
- EPA website
- Hazard Communication Standard (HCS 2012)
- IARC website
- List Of Lists EPA: Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112@ of the Clean Air Act
- Massachussetts 105 CMR Department of public health 670.000: "Right to Know"

16. Other information ... / >>

- Minnesota Chapter 5206 Department Of Labor and Industry Hazardous Substances, Employee "Right to Know".- New Jersey Worker and Community Right to know Act N.J.S.A.
- NTP. 2011. Report on Carcinogens, 12th Edition.
- OSHA website
- Pennsylvania, Hazardous Substance List, Chapter 323

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

Product's classification is based on the criteria set out in OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200), unless otherwise indicated in sections 11 and 12.

The data for evaluation of chemical-physical properties are reported in section 9.

Changed TLVs in section 8.1 for following countries:

EU,

Changes to previous review:

The following sections were modified:

01 / 02 / 03 / 04 / 05 / 08 / 09 / 10 / 11 / 12 / 13 / 15 / 16.