

## Safety data sheet according to Regulation (EC) No. 1907/2006

### SECTION 1. Identification of the substance/mixture and of the company/undertaking.

#### 1.1. Product identifier.

Code. **HI93716-0**  
Product name. **Bromine Reagent**

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

Intended use. **Determination of Bromine in Water Samples.**

#### 1.3. Details of the supplier of the safety data sheet.

Name. **Hanna Instruments S.R.L.**  
Full address. **str. Hanna Nr 1**  
District and Country. **457260 loc. Nusfalau (Salaj)**  
**Romania**  
Tel. **(+40) 260607700**  
Fax. **(+40) 260607700**

e-mail address of the competent person.  
responsible for the Safety Data Sheet. **msds@hanna.ro**

#### 1.4. Emergency telephone number.

For urgent inquiries refer to. **Emergency Number - International: +(1)-703-527-3887 - UK, London:  
+(44)-870-8200418 - CHEMTREC 24 hours/365 days**

### SECTION 2. Hazards identification.

#### 2.1. Classification of the substance or mixture.

The product is classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of EC Regulation 1907/2006 and subsequent amendments.

Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Specific target organ toxicity - repeated exposure, category 1	H372	Causes damage to organs through prolonged or repeated exposure.
Skin irritation, category 2	H315	Causes skin irritation.

#### 2.2. Label elements.

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:



Signal words: **Danger**

Hazard statements:

**H372** Causes damage to organs through prolonged or repeated exposure.  
**H315** Causes skin irritation.

Precautionary statements:

**P260** Do not breathe dust, fume, gas, mist, vapours, spray.  
**P280** Wear protective gloves.  
**P302+P352** IF ON SKIN: Wash with plenty of water and soap.  
**P312** Call a POISON CENTER or doctor, if you feel unwell.  
**P362** Take off contaminated clothing.

### SECTION 2. Hazards identification. ... / >>

**Contains:** POTASSIUM IODIDE

#### 2.3. Other hazards.

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

### SECTION 3. Composition/information on ingredients.

#### 3.1. Substances.

Information not relevant.

#### 3.2. Mixtures.

**Contains:**

Identification.	x = Conc. %.	Classification 1272/2008 (CLP).
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##### POTASSIUM IODIDE

CAS. 7681-11-0	10 ≤ x < 30	Acute Tox. 4 H302, STOT RE 1 H372, Skin Irrit. 2 H315
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EC. 231-659-4

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##### EDTA DISODIUM SALT

CAS. 6381-92-6	1 ≤ x < 5	Acute Tox. 4 H332, STOT RE 2 H373
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EC. 205-358-3

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Reg. no. 01-2119486775-20

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

CAS. 6283-63-2	1 ≤ x < 5	Acute Tox. 4 H302
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EC. 228-500-6

INDEX.

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

### SECTION 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 15 minutes, opening the eyelids fully. If problem persists, seek medical advice.

**SKIN:** Remove contaminated clothing. Wash immediately with plenty of water. If irritation persists, get medical advice/attention. Wash contaminated clothing before using it again.

**INHALATION:** Remove to open air. In the event of breathing difficulties, get medical advice/attention immediately.

**INGESTION:** Get medical advice/attention. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person, unless authorised by a doctor.

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

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

For symptoms and effects caused by the contained substances, see chap. 11.

##### 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.

### SECTION 5. Firefighting 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

None in particular.

### SECTION 5. Firefighting measures. ... / >>

#### 5.2. Special hazards arising from the substance or mixture.

##### HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products. The product is combustible and, when the powder is released into the air in sufficient concentrations and in the presence of a source of ignition, it can create explosive mixtures with air. Fires may start or get worse by leakage of the solid product from the container, when it reaches high temperatures or through contact with sources of ignition.

##### EDTA DISODIUM SALT

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

##### POTASSIUM IODIDE

Hydrogen iodide, Potassium 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).

### SECTION 6. Accidental release measures.

#### 6.1. Personal precautions, protective equipment and emergency procedures.

If there are no contraindications, spray powder with water to prevent the formation of dust.

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 and place it in containers for recovery or disposal. If the product is flammable, use explosion-proof equipment.

If there are no contraindications, use jets of water to eliminate product residues.

Make sure the leakage site is well aired. Evaluate the compatibility of the container to be used, by checking section 10. 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.

### SECTION 7. Handling and storage.

#### 7.1. Precautions for safe handling.

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

#### 7.2. Conditions for safe storage, including any incompatibilities.

Store only in the original container. Store the containers sealed, in a well ventilated place, away from direct sunlight. Keep containers away from any incompatible materials, see section 10 for details.

Storage class TRGS 510 (Germany): 6.1C

#### 7.3. Specific end use(s).

Information not available.

### SECTION 8. Exposure controls/personal protection.

#### 8.1. Control parameters.

Regulatory References:

TLV-ACGIH      ACGIH 2016

#### POTASSIUM IODIDE

##### Threshold Limit Value.

Type	Country	TWA/8h		STEL/15min	
		mg/m3	ppm	mg/m3	ppm
TLV-ACGIH			0,01		

##### Predicted no-effect concentration - PNEC.

Normal value in fresh water	0,007	mg/l
Normal value for fresh water sediment	0,007	mg/kg
Normal value for water, intermittent release	0,075	mg/l

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers.				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral.			VND	0,01 mg/kg bw/d				
Inhalation.			VND	0,035 mg/m3			VND	0,07 mg/m3
Skin.			VND	1 mg/kg bw/d			VND	1 mg/kg bw/d

#### EDTA DISODIUM SALT

##### Predicted no-effect concentration - PNEC.

Normal value in fresh water	2,2	mg/l
Normal value in marine water	0,22	mg/l
Normal value of STP microorganisms	43	mg/l
Normal value for the terrestrial compartment	0,72	mg/kg/d

##### Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers.				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral.	VND	25 mg/kg/d						
Inhalation.	1,2 mg/m3	VND	0,6 mg/m3	VND	3 mg/m3	VND	1,5 mg/m3	VND

Legend:

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

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

#### 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 be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

##### HAND PROTECTION

In the case of prolonged contact with the product, protect the hands with penetration-resistant work gloves (see standard EN 374).

Work glove material must be chosen according to the use process and the products that may form. Latex gloves may cause sensitivity reactions.

##### SKIN PROTECTION

Wear category III professional long-sleeved overalls and safety footwear (see Directive 89/686/EEC and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

##### EYE PROTECTION

Wear airtight protective goggles (see standard EN 166).

### SECTION 8. Exposure controls/personal protection. ... / >>

In the presence of risks of exposure to splashes or squirts during work, adequate mouth, nose and eye protection should be used to prevent accidental absorption.

#### RESPIRATORY PROTECTION

Use a type P filtering facemask (see standard EN 149) or equivalent device, whose class (1, 2 or 3) and effective need, must be defined according to the outcome of risk assessment.

#### ENVIRONMENTAL EXPOSURE CONTROLS.

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

### SECTION 9. Physical and chemical properties.

#### 9.1. Information on basic physical and chemical properties.

Appearance	powder
Colour	ivory
Odour	odourless
Odour threshold.	Not available.
pH.	5.8 - 6.2 pH, 15 g/L
Melting point / freezing point.	Not available.
Initial boiling point.	Not applicable.
Boiling range.	Not available.
Flash point.	Not applicable.
Evaporation rate	Not available.
Flammability (solid, gas)	not flammable
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.	2,100
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 available.
Oxidising properties	Not available.

#### 9.2. Other information.

Total solids (250°C / 482°F)	98,00 %
VOC (Directive 2010/75/EC) :	0
VOC (volatile carbon) :	0

### SECTION 10. Stability and reactivity.

#### 10.1. Reactivity.

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

#### 10.2. Chemical stability.

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

##### POTASSIUM IODIDE

May decompose on exposure to air and moisture. Stable under recommended storage conditions.

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

Sensitive to moisture, Sensitivity to light.

#### 10.3. Possibility of hazardous reactions.

The powders are potentially explosive when mixed with air.

##### EDTA DISODIUM SALT

Violent reactions possible with: Strong oxidizing agents.

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

### SECTION 10. Stability and reactivity. ... / >>

Violent reactions possible with: Strong oxidizing agents.

#### 10.4. Conditions to avoid.

Avoid environmental dust build-up.

POTASSIUM IODIDE  
Tin/tin oxides.

EDTA DISODIUM SALT  
Strong heating.

N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE  
Strong heating (decomposition).

#### 10.5. Incompatible materials.

POTASSIUM IODIDE  
Strong reducing agents, Nickel, Strong acids, and its alloys, Steel (all types and surface treatments), Aluminum, Alkali metals, Brass, Magnesium, Zinc, cadmium, Copper.

EDTA DISODIUM SALT  
Aluminium, Copper, Copper alloys, Nickel, Zinc.

#### 10.6. Hazardous decomposition products.

Information not available.

### SECTION 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.

EDTA DISODIUM SALT

Skin irritation, Rabbit, Result: No irritation, (anhydrous substance) - Eye irritation, Rabbit, Result: No eye irritation, (anhydrous substance) - Sensitisation, Sensitisation possible in predisposed persons - Germ cell mutagenicity Genotoxicity in vitro, Ames test, Salmonella typhimurium, Result: negative (anhydrous substance), Mouse lymphoma test, Result: negative, (anhydrous substance) - Specific target organ toxicity, repeated exposure, Target Organs: Respiratory Tract, May cause amage to organs through prolonged or repeated exposure - Repeated dose toxicity, Rat male, Inhalation aerosol, 5 d daily, LOAEL: 0,03 mg/l, Target Organs: Lungs, larynx - Repeated dose toxicity, Rat male and female, Inhalation dust/mist, 90 d daily, NOAEL: 0,003 mg/l, Target Organs: larynx.

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.

POTASSIUM IODIDE

Skin corrosion/irritation, Skin, rabbit, Result: Irritating to skin - Serious eye damage/eye irritation, Eyes, rabbit, Result: Irritating to eyes, 24 h, (Draize Test) - Respiratory or skin sensitisation, Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals - Reproductive toxicity, Exposure to excessive amounts of iodine during pregnancy is capable of producing fetal hypothyroidism, Iodine-containing drugs have been associated with fetal goiter - Additional Information, Prolonged exposure to iodides may produce iodism in sensitive individuals. Symptoms of exposure include: skin rash, running nose, headache and irritation of the mucous membrane. For severe cases the skin may show pimples, boils, hives, blisters and black and blue spots. Iodides are readily diffused across the placenta. Neonatal deaths from respiratory distress secondary to goiter have been reported. Iodides have been known to cause drug-induced fevers, which are usually of short duration, Liver, Irregularities, Based on Human Evidence.

#### ACUTE TOXICITY.

LC50 (Inhalation - vapours) of the mixture:	Not classified (no significant component).
LC50 (Inhalation - mists / powders) of the mixture:	30,000 mg/l
LD50 (Oral) of the mixture:	13275,335 mg/kg
LD50 (Dermal) of the mixture:	Not classified (no significant component).

### SECTION 11. Toxicological information. ... / >>

EDTA DISODIUM SALT  
LD50 (Oral). > 2800 mg/kg Rat

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

POTASSIUM IODIDE  
LD50 (Oral). 1000 mg/kg Mouse

SKIN CORROSION / IRRITATION.  
Causes skin irritation.

SERIOUS EYE DAMAGE / IRRITATION.  
Does not meet the classification criteria for this hazard class.

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.  
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.  
Causes damage to organs.

ASPIRATION HAZARD.  
Does not meet the classification criteria for this hazard class.

### SECTION 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.

EDTA DISODIUM SALT  
Toxicity to bacteria, EC50 activated sludge: 403 mg/l, 3 h, - EC50 Pseudomonas putida: 56 mg/l, 8 h (anhydrous substance).  
POTASSIUM IODIDE  
Toxicity to daphnia and other aquatic invertebrates, EC50, Daphnia: 2,7 mg/l - 24 h.

EDTA DISODIUM SALT  
LC50 - for Fish. 320 mg/l/96h Poecilia Reticulata

POTASSIUM IODIDE  
LC50 - for Fish. 2190 mg/l/96h Oncorhynchus mykiss

#### 12.2. Persistence and degradability.

EDTA DISODIUM SALT  
Solubility in water. 20°C mg/l

POTASSIUM IODIDE  
Solubility in water. > 10000 mg/l  
Rapidly biodegradable.

#### 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.

### SECTION 12. Ecological information. ... / >>

POTASSIUM IODIDE  
Partition coefficient: n-octanol/water. -0,958  
BCF. 2,268

#### 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.

EDTA DISODIUM SALT  
Discharge into the environment must be avoided.  
N,N-DIETHYL-1,4-PHENYLENEDIAMMONIUM SULFATE  
Discharge into the environment must be avoided.

### SECTION 13. Disposal considerations.

#### 13.1. Waste treatment methods.

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.  
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.

### SECTION 14. Transport information.

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

#### 14.1. UN number.

Not applicable.

#### 14.2. UN proper shipping name.

Not applicable.

#### 14.3. Transport hazard class(es).

Not applicable.

#### 14.4. Packing group.

Not applicable.

#### 14.5. Environmental hazards.

Not applicable.

#### 14.6. Special precautions for user.

Not applicable.

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

Information not relevant.

### SECTION 15. Regulatory information.

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





### SECTION 16. Other information. ... / >>

- REACH: EC Regulation 1907/2006
- 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.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

#### GENERAL BIBLIOGRAPHY

1. Regulation (EU) 1907/2006 (REACH) of the European Parliament
2. Regulation (EU) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
4. Regulation (EU) 2015/830 of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- ECHA website

#### 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.

#### Changes to previous review:

The following sections were modified:

01 / 08 / 09.