

# Safety Data Sheet

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

### 1.1 Product identifier

|                                |   |
|--------------------------------|---|
| Trade name/designation:        | Nitrochromic reagent Reag. Ph. Eur. 1059100 |
| Product No.:                   | 87881                                       |
| CAS No.:                       | not applicable                              |
| Other means of identification: | none  |

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

|                           |                                     |
|---------------------------|-------------------------------------|
| Relevant identified uses: | Scientific research and development |
|---------------------------|-------------------------------------|

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

*Singapore*

#### **VWR Singapore Pte Ltd.**

|                           |                         |
|---------------------------|-------------------------|
| Street                    | 18 Gul Drive            |
| Postal code/City          | Singapore 629468        |
| Telephone                 | +65 6505 0760           |
| Telefax                   | +65 6264 3780           |
| E-mail (competent person) | SDS@avantorsciences.com |

### 1.4 Emergency phone number

|           |   |
|-----------|---|
| Telephone | +65 (0) 6505 0760 (office hours: 8 am-5 pm) |
|-----------|---|

## SECTION 2: Hazard identification

### 2.1 Classification of the substance or mixture

| Hazard classes and hazard categories                      | Hazard statements |
|---|-------------------|
| Oxidising liquid, category 3                              | H272              |
| Substance or mixture corrosive to metals, category 1      | H290              |
| Acute toxicity, category 3, inhalation                    | H331              |
| Skin corrosion, category 1A                               | H314              |
| Germ cell mutagenicity, category 1B                       | H340              |
| Carcinogenicity, category 1B                              | H350              |
| Hazardous to the aquatic environment, chronic, category 3 | H412              |
| Reproductive toxicity, category 1B                        | H360Fd            |
| Respiratory sensitization, category 1                     | H334              |
| Skin sensitization, category 1                            | H317              |

### 2.2 Label elements

#### Hazard pictograms



**Signal word:** Danger

| Hazard statements |  |
|-------------------|--|
| H272              | May intensify fire; oxidiser.  |
| H290              | May be corrosive to metals.  |
| H331              | Toxic if inhaled.  |
| H314              | Causes severe skin burns and eye damage.                                   |
| H317              | May cause an allergic skin reaction.                                       |
| H334              | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H340              | May cause genetic defects.   |
| H350              | May cause cancer.  |
| H360Fd            | Suspected of damaging fertility. Suspected of damaging the unborn child.   |
| H412              | Harmful to aquatic life with long lasting effects.                         |

| Precautionary statements |   |
|--------------------------|---|
| P201                     | Obtain special instructions before use.   |
| P210                     | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.      |
| P220                     | Keep/Store away from clothing/combustible materials.  |
| P280                     | Wear protective gloves/protective clothing/eye protection/face protection.                          |
| P260                     | Do not breathe dust/fume/gas/mist/vapours/spray.  |
| P261                     | Avoid breathing dust/fume/gas/mist/vapours/spray.   |
| P284                     | [In case of inadequate ventilation] wear respiratory protection.                                    |
| P264                     | Wash ... thoroughly after handling.   |
| P271                     | Use only outdoors or in a well-ventilated area.   |
| P272                     | Contaminated work clothing should not be allowed out of the workplace.                              |
| P273                     | Avoid release to the environment.   |
| P234                     | Keep only in original container.  |
| P202                     | Do not handle until all safety precautions have been read and understood.                           |
| P301+P330+P331           | IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  |
| P302+P352                | IF ON SKIN: Wash with plenty of water/...   |
| P303+P361+P353           | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P362+P364                | Take off contaminated clothing and wash it before reuse.  |
| P363                     | Wash contaminated clothing before reuse.  |
| P304+P340                | IF INHALED: Remove person to fresh air and keep comfortable for breathing.                          |
| P308+P313                | IF exposed or concerned: Get medical advice/attention.  |
| P310                     | Immediately call a POISON CENTER/doctor/...   |
| P311                     | Call a POISON CENTER/doctor/...   |
| P321                     | Specific treatment (see ... on this label).   |
| P333+P313                | If skin irritation or rash occurs: Get medical advice/attention.                                    |
| P342+P311                | If experiencing respiratory symptoms: Call a POISON CENTER/doctor/...                               |
| P370+P378                | In case of fire: Use... to extinguish.  |
| P390                     | Absorb spillage to prevent material damage.   |
| P403+P233                | Store in a well-ventilated place. Keep container tightly closed.                                    |
| P405                     | Store locked up.  |
| P406                     | Store in a corrosive resistant/... container with a resistant inner liner.                          |

## 2.3 Other hazards

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

## SECTION 3: Composition / information on ingredients

### 3.1 Substances

not applicable

### 3.2 Mixtures

#### Composition / Information on ingredients

| Substance name       | Concentration | Identifier         | Hazard classes and hazard categories   |
|----------------------|---------------|--------------------|--|
| Nitric acid          | 65 - 70%      | CAS No.: 7697-37-2 | Ox. Liq. 2 - H272<br>Met. Corr. 1 - H290<br>Acute Tox. 1 - H330<br>Skin Corr. 1A - H314  |
| Potassium dichromate | 0.5 - 1%      | CAS No.: 7778-50-9 | Ox. Sol. 2 - H272<br>Acute Tox. 2 - H330<br>Acute Tox. 3 - H301<br>Acute Tox. 4 - H312<br>Skin Corr. 1B - H314<br>Muta. 1B - H340<br>Carc. 1B - H350<br>STOT SE 3 - H335<br>STOT RE 1 - H372<br>Aquatic Chronic 1 - H410<br>Repr. 1B - H360FD<br>Resp. Sens. 1 - H334<br>Skin Sens. 1 - H317 |

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

#### General information

IF exposed: Immediately call a POISON CENTRE/doctor. If unconscious but breathing normally, place in recovery position and seek medical advice. Never give anything by mouth to an unconscious person or a person with cramps. Change contaminated, saturated clothing. Do not leave affected person unattended.

#### After inhalation

Immediately call a POISON CENTRE/doctor. Remove casualty to fresh air and keep warm and at rest. If breathing is irregular or stopped, administer artificial respiration.

#### In case of skin contact

After contact with skin, wash immediately with plenty of water and soap. Remove contaminated, saturated clothing immediately. Immediate medical treatment required because corrosive injuries that are not treated are hard to cure.

#### After eye contact:

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist. Protect uninjured eye. Remove contact lenses, if present and easy to do. Continue rinsing.

#### In case of ingestion

Immediately call a POISON CENTRE/doctor. Do NOT induce vomiting. Rinse mouth thoroughly with water. Give nothing to eat or drink.

**Self-protection of the first aider**

First aider: Pay attention to self-protection!

**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**

no data available

**SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing media**

The product itself does not burn.

May intensify fire; oxidiser.

Co-ordinate fire-fighting measures to the fire surroundings.

**Extinguishing media which must not be used for safety reasons**

no restriction

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

In case of fire may be liberated:

Pyrolysis products, toxic

**5.3 Advice for firefighters**

DO NOT fight fire when fire reaches explosives.

Special protective equipment for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

**Additional information**

Do not allow run-off from fire-fighting to enter drains or water courses.

Do not inhale explosion and combustion gases.

Use water spray jet to protect personnel and to cool endangered containers.

In case of fire: Evacuate area.

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

In case of major fire and large quantities: Remove persons to safety.

**6.2 Environmental precautions**

Discharge into the environment must be avoided.

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

Spilled product must never be returned to the original container for recycling. Collect in closed and suitable containers for disposal.

**6.4 Additional information**

Clear spills immediately.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

All work processes must always be designed so that the following is as low as possible:

Inhalation

skin contact

Eye contact

Use extractor hood (laboratory).

If handled uncovered, arrangements with local exhaust ventilation have to be used.

If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means.

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

Recommended storage temperature: no data available

Storage class: no data available

Keep container tightly closed and in a well-ventilated place. Keep/Store only in original container.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

| Ingredient<br>(Designation) | Regulatory<br>information   | Country | Limit value type<br>(country of origin) | Limit value                      | Remark |
|-----------------------------|---|---------|---|----------------------------------|--------|
| Nitric acid                 | Workplace Safety<br>and Health (General<br>Provisions)<br>Regulations,<br>WORKPLACE SAFETY<br>AND HEALTH ACT<br>(CHAPTER 354A,<br>SECTION 65) | SG      | LTV                                     | 2 ppm - 5.2<br>mg/m <sup>3</sup> |        |
| Nitric acid                 | Workplace Safety<br>and Health (General<br>Provisions)<br>Regulations,<br>WORKPLACE SAFETY<br>AND HEALTH ACT<br>(CHAPTER 354A,<br>SECTION 65) | SG      | STV                                     | 4 ppm - 10 mg/m <sup>3</sup>     |        |

### 8.2 Exposure controls

#### 8.2.1 Appropriate engineering controls

no data available

### 8.2.2 Personal protection equipment

no data available

#### *Eye/face protection*

no data available

Recommendation: no data available

#### *Skin protection*

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits.

Recommended glove articles DIN-/EN-Norms EN ISO 374 In the case of wanting to use the gloves again, clean them before taking off and air them well.

#### By short-term hand contact

|                                  |   |
|----------------------------------|---|
| Suitable material:               | Butyl caoutchouc (butyl rubber)/FKM (fluoro rubber) |
| Thickness of the glove material: | 0,70 mm   |
| Breakthrough time::              | > 480 min   |
| Recommended glove articles:      | VWR 112-3819  |

#### By long-term hand contact

|                                  |   |
|----------------------------------|---|
| Suitable material:               | Butyl caoutchouc (butyl rubber)/FKM (fluoro rubber) |
| Thickness of the glove material: | 0,70 mm   |
| Breakthrough time::              | > 480 min   |
| Recommended glove articles:      | VWR 112-3819  |

#### *Respiratory protection*

no data available

|  |                   |
|--|-------------------|
| Suitable respiratory protection apparatus: | no data available |
| Recommendation:                            | no data available |
| Suitable material:                         | no data available |
| Recommendation:                            | no data available |

#### *Additional information*

no data available

### 8.2.3 Environmental exposure controls

no data available

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|                      |                   |
|----------------------|-------------------|
| (a) Appearance       |                   |
| Physical state:      | liquid            |
| Colour:              | no data available |
| (b) Odour:           | no data available |
| (c) Odour threshold: | no data available |

#### Safety relevant basic data

|  |                               |
|--|-------------------------------|
| (d) pH:                                      | no data available             |
| (e) Melting point/freezing point:            | no data available             |
| (f) Initial boiling point and boiling range: | no data available             |
| (g) Flash point:                             | no data available             |
| (h) Evaporation rate:                        | no data available             |
| (i) Flammability (solid, gas):               | not applicable                |
| (j) Flammability or explosive limits         |                               |
| Lower explosion limit:                       | no data available             |
| Upper explosion limit:                       | no data available             |
| (k) Vapour pressure:                         | no data available             |
| (l) Vapour density:                          | no data available             |
| (m) Density:                                 | no data available             |
| (n) Solubility(ies)                          |                               |
| Water solubility:                            | no data available             |
| (o) Partition coefficient: n-octanol/water:  | no data available             |
| (p) Auto-ignition temperature:               | no data available             |
| (q) Decomposition temperature:               | not applicable                |
| (r) Viscosity                                |                               |
| Kinematic viscosity:                         | no data available             |
| Dynamic viscosity:                           | no data available             |
| (s) Explosive properties:                    | not applicable                |
| (t) Oxidising properties:                    | May intensify fire; oxidiser. |
| (u) Particle characteristics:                | does not apply to liquids     |

### 9.2 Other information

|                        |                   |
|------------------------|-------------------|
| Bulk density:          | no data available |
| Refraction index:      | no data available |
| Dissociation constant: | no data available |
| Surface tension:       | no data available |
| Henry's Law Constant:  | no data available |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

no data available



## 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

## 10.3 Possibility of hazardous reactions

no data available

## 10.4 Conditions to avoid

no data available

## 10.5 Incompatible materials

no data available

## 10.6 Hazardous decomposition products

no data available

## 10.7 Additional information

no data available

# SECTION 11: Toxicological information

## 11.1 Information on toxicological effects

### Acute effects

#### *Acute oral toxicity:*

Nitric acid - LDLo: > 430 mg/kg - Human - (Sax)

Potassium dichromate - LD50: 168 mg/kg - Rat - (IUCLID)

Potassium dichromate - LD50: 168 mg/kg - Rat - (OECD 401)

#### *Acute dermal toxicity:*

Potassium dichromate - LD50: 1860 mg/kg - Rabbit - (IUCLID)

Potassium dichromate - LD50: > 1170 mg/kg - Rat - (IUCLID)

Potassium dichromate - LD50: 1860 mg/kg - Rabbit - (OECD 402)

#### *Acute inhalation toxicity:*

Nitric acid - LC50: > 2.65 mg/l (4 h) - Rat - (OECD 403)

Potassium dichromate - LC50: 83 - 99 mg/m<sup>3</sup> - Rat - (IUCLID)

Potassium dichromate - LC50: 217 mg/m<sup>3</sup> (4 h) - Rat - (OECD 403)

**Irritant and corrosive effects***Primary irritation to the skin:*

Causes severe skin burns and eye damage.

*Irritation to eyes:*

Causes serious eye damage.

*Irritation to respiratory tract:*

not applicable

**Respiratory or skin sensitisation**

In case of skin contact: sensitising

After inhalation: sensitising

**STOT-single exposure**

not applicable

**STOT-repeated exposure**

not applicable

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)****Carcinogenicity**

May cause cancer.

**Germ cell mutagenicity**

May cause genetic defects.

**Reproductive toxicity**

Suspected of damaging fertility. Suspected of damaging the unborn child.

**Aspiration hazard**

not applicable

**Other adverse effects**

no data available

**Additional information**

no data available

## SECTION 12: Ecological information

### 12.1 Ecotoxicity

**Fish toxicity:**

Potassium dichromate - LC50: 51.1 mg/l (96 h)

**Daphnia toxicity:**

Potassium dichromate - EC50: 0.12 mg/l (48 h)

Potassium dichromate - LC50: 7.18 mg/l (48 h)

**Algae toxicity:**

Potassium dichromate - EC50: 0.61 mg/l (72 h)

**Bacteria toxicity:**

no data available

**12.2 Persistence and degradability**

no data available

**12.3 Bioaccumulative potential**

Partition coefficient: n-octanol/water: no data available

**12.4 Mobility in soil:**

no data available

**12.5 Results of PBT/vPvB assessment**

not applicable

**12.6 Other adverse effects**

no data available

**SECTION 13: Disposal considerations**
**13.1 Waste treatment methods**
**Appropriate disposal / Product**

Dispose according to local legislation. Consult the appropriate local waste disposal expert about waste disposal.

Waste code product: no data available

**Appropriate disposal / Package**

Dispose according to local legislation. Handle contaminated packages in the same way as the substance itself.

**Additional information**

no data available

**SECTION 14: Transport information**
**Land transport (ADR/RID)**

|      |  |   |
|------|--|---|
| 14.1 | UN-No.:                                    | 3093  |
| 14.2 | Proper Shipping Name:                      | CORROSIVE LIQUID, OXIDIZING, N.O.S. (NITRIC ACID/POTASSIUM DICHROMATE SOLUTION) |
| 14.3 | Class(es):                                 | 8 (5.1)   |
|      | Classification code:                       | CO1   |
|      | Hazard label(s):                           | 8+5.1   |
| 14.4 | Packing group:                             | II  |
| 14.5 | Environmental hazards:                     | No  |
| 14.6 | Special precautions for user:              |   |
|      | Hazard identification number (Kemler No.): | 85  |
|      | tunnel restriction code:                   | E   |
|      |  | (Passage forbidden through tunnels of category E.)                              |

## Sea transport (IMDG)

|      |  |   |
|------|--|---|
| 14.1 | UN-No.:  | 3093  |
| 14.2 | Proper Shipping Name:  | CORROSIVE LIQUID, OXIDIZING, N.O.S. (NITRIC ACID/POTASSIUM DICHROMATE SOKUTION) |
| 14.3 | Class(es):   | 8 (5.1)   |
|      | Classification code:   |   |
|      | Hazard label(s):   | 8+5.1   |
| 14.4 | Packing group:   | II  |
| 14.5 | Environmental hazards:   | No  |
|      | Marine pollutant:  | No  |
| 14.6 | Special precautions for user:  |   |
|      | Segregation group:   | 1   |
|      | EmS-No.  | F-A S-Q   |
| 14.7 | Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code |   |
|      | not relevant   |   |

## Air transport (ICAO-TI / IATA-DGR)

|      |                               |   |
|------|-------------------------------|---|
| 14.1 | UN-No.:                       | 3093  |
| 14.2 | Proper Shipping Name:         | CORROSIVE LIQUID, OXIDIZING, N.O.S. (NITRIC ACID/POTASSIUM DICHROMATE SOKUTION) |
| 14.3 | Class(es):                    | 8 (5.1)   |
|      | Classification code:          |   |
|      | Hazard label(s):              | 8+5.1   |
| 14.4 | Packing group:                | II  |
| 14.5 | Special precautions for user: |   |

## SECTION 15: Regulatory information

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

#### National regulations

- Workplace Safety and Health Act
- Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order
- Environmental Protection and Management Act (EPMA) - Second Schedule, Part 1, Control of Hazardous Substances
- Maritime and Port Authority of Singapore (MPA) - Dangerous Goods, Petroleum and Explosives Regulations

## SECTION 16: Other information

#### Abbreviations and acronyms

ACGIH - American Conference of Governmental Industrial Hygienists  
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road  
AGS - Committee on Hazardous Substances (Ausschuss für Gefahrstoffe)  
CLP - Regulation on Classification, Labelling and Packaging of Substances and Mixtures  
DFG - German Research Foundation (Deutsche Forschungsgemeinschaft)  
DNEL - Derived No Effect Level  
Gestis - Information system on hazardous substances of the German Social Accident Insurance (Gefahrstoffinformationssystem der Deutschen Gesetzlichen Unfallversicherung)  
IATA-DGR - International Air Transport Association-Dangerous Goods Regulations  
ICAO-TI - International Civil Aviation Organization-Technical Instructions  
IMDG - International Maritime Code for Dangerous Goods  
KOSHA - Korea Occupational Safety and Health Agency  
LTV - Long Term Value  
NIOSH - National Institute for Occupational Safety and Health  
OSHA - Occupational Safety & Health Administration  
PBT - Persistent, Bioaccumulative and Toxic  
PNEC - Predicted No Effect Concentration  
RID - Regulation concerning the International Carriage of Dangerous Goods by Rail  
STV - Short Term Value  
SVHC - Substances of Very High Concern  
vPvB - very Persistent, very Bioaccumulative

#### Key literature references and sources for data

This Safety Data Sheet has been prepared based on information available for public as TOXNET information, European Chemicals Agency (ECHA) substance dossier, papers from international cancer research institutes (IARC Monographs), U.S. National Toxicology Program data, U.S. Agency for Toxic Substances and Disease Control (ATSDR), PubChem websites and SDS from our raw material manufacturers.

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**Additional information**

## Indication of changes

Section 7.1: Introduction of general occupation hygienic measures  
Section 8: Update of NOEL data  
Section 8: Update of DNEL and/or PNEC data  
Section 9: Introduction of particle characteristics  
Section 16: Introduction of classification procedure for mixtures  
Section 16: Introduction of safety training advice  
Section 16: Introduction of relevant hazard statements in full text  
Section 16: Introduction of key literature references and sources of data

If you need an explanation of the change, contact the supplier (SDS@avantorsciences.com).

*The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.*