

## Material Safety Data Sheet

### According to 91/155 EEC

Reviewed on 17.02.2005

#### \* 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Manganese HR Set (Vario Manganese Citrate Buffer)
- **Catalog number:** 251 406      **Model:** Mn-1 TP
- **Supplier:**  
WTW Wissenschaftlich-Technische Werkstätten GmbH  
Dr.-Karl-Slevogt-Straße 1  
D-82362 Weilheim      Tel.: +49(0)881 183-0      Internet: <http://www.WTW.com>  
Fax: +49(0)881 183-420      Tel.: +49(0)881 183-100      E-Mail: [Info@WTW.com](mailto:Info@WTW.com)
- **Emergency information:**  
Poison Center Berlin, Germany  
Tel.: +49(0)30 19240

#### \* 2 Composition/Data on components:

- **Description:** Mixture of the substances listed below with harmless additions.

**Dangerous components:**

CAS: 77-92-9	citric acid	☒ Xi; R 36	10-20%
EINECS: 201-069-1			

- **Additional information** For the wording of the listed risk phrases refer to section 16.

#### 3 Hazards identification

- **Hazard designation:** void
- **Information pertaining to particular dangers for man and environment**  
The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- **Classification system**  
The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

#### \* 4 First aid measures

- **General information** No special measures required.
- **After inhalation** Supply fresh air; consult doctor in case of symptoms.
- **After skin contact** Instantly wash with water and soap and rinse thoroughly.
- **After eye contact**  
Rinse opened eye for several minutes under running water.  
Seek immediate medical advice.
- **After swallowing**  
Rinse out mouth and then drink plenty of water.  
In case of persistent symptoms consult doctor.
- **The following symptoms may occur:**  
After swallowing of large amounts:  
sickness

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**Product name: Manganese HR Set (Vario Manganese Citrate Buffer)**

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vomiting

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### \* 5 Fire fighting measures

- **Suitable extinguishing agents**  
CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.  
Use fire fighting measures that suit the environment.
- **Special hazards caused by the material, its products of combustion or resulting gases:**  
Formation of toxic gases is possible during heating or in case of fire.  
Sulphur oxides (SO<sub>x</sub>)  
Phosphorus oxides (P<sub>x</sub>O<sub>x</sub>)
- **Protective equipment:**  
Wear self-contained breathing apparatus.  
Wear full protective suit.
- **Additional information**  
Ambient fire may liberate hazardous vapours.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.  
Collect contaminated fire fighting water separately. It must not enter drains.

### \* 6 Accidental release measures

- **Person-related safety precautions:**  
Wear protective equipment. Keep unprotected persons away.  
Avoid causing dust.
- **Measures for environmental protection:** Do not allow product to reach sewage system or water bodies.
- **Measures for cleaning/collecting:**  
Ensure adequate ventilation.  
Collect mechanically.
- **Additional information:** No dangerous materials are released.

### \* 7 Handling and storage

- **Handling**
- **Information for safe handling:** No special measures required.
- **Information about protection against explosions and fires:** Protect from heat.
- **Storage**
- **Requirements to be met by storerooms and containers:** Store in cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Store under dry conditions.  
Protect from humidity and keep away from water.  
Protect from the effects of light.
- **Storage class** Not required.

### \* 8 Exposure controls and personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Components with limit values that require monitoring at the workplace:**  
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the compilation were used as basis.
- **Personal protective equipment**
- **General protective and hygienic measures** Do not eat, drink or smoke while working.
- **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.

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**Product name: Manganese HR Set (Vario Manganese Citrate Buffer)**

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- **Recommended filter device for short term use:** Filter P1
- **Protection of hands:** Preventive skin protection by use of skin-protecting agents is recommended.
- **Material of gloves**  
Nitrile  
Recommended thickness of the material:  $\geq 0.11$  mm
- **Penetration time of glove material**  
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.  
Value for the permeation: Level  $\geq 6$  (480 min)
- **Eye protection:** Safety glasses
- **Body protection:** Protective work clothing.

### \* 9 Physical and chemical properties:

· <b>Form:</b>	Powder
· <b>Colour:</b>	White
· <b>Odour:</b>	Odourless
· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	891°C
· <b>Flash point:</b>	Not applicable
· <b>Ignition temperature:</b>	345°C
· <b>Self-inflammability:</b>	Product is not selfigniting.
· <b>Danger of explosion:</b>	Product is not explosive.
· <b>Density at 20°C</b>	1.578 g/cm <sup>3</sup>
· <b>Solubility in / Miscibility with Water:</b>	Soluble
· <b>pH-value (19 g/l) at 20°C:</b>	6.3
· <b>Solvent content:</b>	
· <b>Organic solvents:</b>	0.0 %
· <b>Solids content:</b>	100.0 %

### \* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Materials to be avoided:** reducing agents
- **Dangerous reactions** No dangerous reactions known
- **Dangerous products of decomposition:** No dangerous decomposition products known

### \* 11 Toxicological information

- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

· **LD/LC50 values that are relevant for classification:**

<b>7558-79-4 disodium hydrogenorthophosphate</b>		
Oral	LD50	17000 mg/kg (rat)
<b>7757-82-6 sodium sulphate</b>		
Oral	LD50	5989 mg/kg (mouse)
<b>77-92-9 citric acid</b>		
Oral	LD50	3000 mg/kg (rat)

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**Product name: Manganese HR Set (Vario Manganese Citrate Buffer)**

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· **Primary irritant effect:**

· **on the skin:** No irritant effect.

· **on the eye:** Irritant effect.

· **Sensitization:** No sensitizing effect known.

· **Additional toxicological information:**

The product is not subject to classification according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version.

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

The usual precautionary measures should be adhered to general rules for handling chemicals.

### \* 12 Ecological information:

· **Information about elimination (persistence and degradability):**

· **Other information:**

CAS: 77-92-9 Citric acid: 98% / 2 d

Quantitative data on the ecological effect of this product are not available.

· **Behaviour in environmental systems:**

**77-92-9 citric acid**

log P(o/w)	-1.72 (20°C) (.)
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· **Mobility and bioaccumulation potential:**

Depending on the concentration, phosphorus compounds may contribute to the eutrophication of water supplies.

· **Ecotoxic effects:**

· **Aquatic toxicity:**

**7757-82-6 sodium sulphate**

EC50	2564 mg/l/48h (Daphnia magna)
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LC50	13500-14500 mg/l/96h (Pimephales promelas)
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**77-92-9 citric acid**

LC50	440-760 mg/l/96h (Leuciscus idus)
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· **Remark:**

· **Bacterial toxicity:** Sulphates toxic > 2.5 g/l

· **Additional ecological information:**

· **BSB5-value:**

**77-92-9 citric acid**

BSB5	0.526 g/g (-)
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· **General notes:**

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water.

Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.

Must not reach sewage water or drainage ditch undiluted or unneutralized.

### \* 13 Disposal considerations

· **Product:**

· **Recommendation** Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **European waste catalogue**

16 05 09	discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08
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· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

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**Product name: Manganese HR Set (Vario Manganese Citrate Buffer)**

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**· Recommended cleaning agent:** Water, if necessary with cleaning agent.

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### \* 14 Transport information

**· ADR/GGVSE:****· IMDG/GGVSee:****· EMS Number:****· ICAO/IATA****· Transport/Additional information:** Not dangerous according to the above specifications.

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### \* 15 Regulatory information

**· Designation according to EC guidelines:**

Observe the normal safety regulations when handling chemicals

The product is not subject to identification regulations under EC Directives and the Ordinance on Hazardous Materials (GefStoffV).

**· Special designation of certain preparations:**Safety data sheet available for professional user on request.

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### \* 16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**· Relevant R-phrases**

36 Irritating to eyes.

**· Department issuing data specification sheet:** Department TSS, Dr. Manfred Kaul**· Data compared to the previous version altered.**

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## Material Safety Data Sheet According to 91/155 EEC

Reviewed on 15.02.2006

### 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Manganese HR Set (Sodium periodate)
- **Catalog number:** 251 406-2      **Model:** Mn-1 TP
- **Supplier:**  
 WTW Wissenschaftlich-Technische Werkstätten GmbH  
 Dr.-Karl-Slevogt-Straße 1  
 D-82362 Weilheim      Tel.: +49(0)881 183-0      Internet: <http://www.WTW.com>  
 Fax: +49(0)881 183-420      Tel.: +49(0)881 183-100      E-Mail: [Info@WTW.com](mailto:Info@WTW.com)
- **Emergency information:**  
 Poison Center Berlin, Germany  
 phone: +49(0)30 19240

### 2 Composition/Data on components:

- **Chemical characterization**
- **Description:** Mixture of anorganic compounds

· **Dangerous components:**

CAS: 7790-28-5	sodium periodate	☒ Xn, ☒ O; R 8-22-36/37/38	40-45%
EINECS: 232-197-6			

- **Additional information** For the wording of the listed risk phrases refer to section 16.

### \* 3 Hazards identification

· **Hazard designation:**



· **Information pertaining to particular dangers for man and environment**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

R 8      Contact with combustible material may cause fire.

R 22      Harmful if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

· **Classification system**

The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

### 4 First aid measures

- **General information** Instantly remove any clothing soiled by the product.
- **After inhalation** Supply fresh air and call for doctor for safety reasons.
- **After skin contact**  
 Instantly rinse with water.  
 If skin irritation continues, consult a doctor.

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**Product name: Manganese HR Set (Sodium periodate)**

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- **After eye contact**  
Rinse opened eye for several minutes under running water.  
Seek medical treatment.
  - **After swallowing**  
Drink copious amounts of water, induce vomiting.  
Call a doctor immediately.
  - **Information for doctor**
  - **The following symptoms may occur:**  
after swallowing:  
sickness  
diarrhoea  
vomiting
- 

### \* 5 Fire fighting measures

- **Suitable extinguishing agents**  
Water spray jet  
Foam
  - **Special hazards caused by the material, its products of combustion or resulting gases:**  
Formation of toxic gases is possible during heating or in case of fire.  
Sulphur oxides (SO<sub>x</sub>)  
iodine compounds  
sodium monoxide  
sodium oxide
  - **Protective equipment:**  
Wear self-contained breathing apparatus.  
Wear full protective suit.
  - **Additional information**  
Collect contaminated fire fighting water separately. It must not enter drains.  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
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### 6 Accidental release measures

- **Person-related safety precautions:**  
Put on breathing apparatus.  
Wear protective equipment. Keep unprotected persons away.  
Avoid causing dust.  
Ensure adequate ventilation  
Keep away from ignition sources
  - **Measures for environmental protection:** Do not allow product to reach sewage system or water bodies.
  - **Measures for cleaning/collecting:**  
Dispose of contaminated material as waste according to item 13.  
Collect mechanically.  
Ensure adequate ventilation.
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### \* 7 Handling and storage

- **Handling**
  - **Information for safe handling:**  
Keep away from heat and direct sunlight.  
Keep containers tightly sealed.  
Prevent formation of dust.
  - **Information about protection against explosions and fires:**  
Substance/product is oxidizing when dry.  
Protect from heat.
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**Product name: Manganese HR Set (Sodium periodate)**

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Keep ignition sources away - Do not smoke.

· **Storage**

· **Requirements to be met by storerooms and containers:** Store in cool location.

· **Information about storage in one common storage facility:**

Store away from flammable substances.

Store away from oxidizing agents.

· **Further information about storage conditions:**

Keep container tightly sealed.

Protect from heat and direct sunlight.

Store under dry conditions.

Protect from humidity and keep away from water.

This product is hygroscopic.

Protect from the effects of light.

## 8 Exposure controls and personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Components with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

· **Additional information:** The lists that were valid during the compilation were used as basis.

· **Personal protective equipment**

· **General protective and hygienic measures**

Keep away from foodstuffs, beverages and food.

Take off immediately all contaminated clothing

Wash hands during breaks and at the end of the work.

Avoid contact with the eyes and skin.

Do not eat, drink or smoke while working.

· **Breathing equipment:** Use breathing protection against the effects of fumes/dust/aerosol.

· **Recommended filter device for short term use:** Filter P2

· **Protection of hands:**

Only use chemical-protective gloves with CE-labelling of category III.

Preventive skin protection by use of skin-protecting agents is recommended.

After use of gloves apply skin-cleaning agents and skin cosmetics.

· **Material of gloves**

nitrile rubber, NBR

Recommended thickness of the material:  $\geq 0.11$  mm

· **Penetration time of glove material**

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

Value for the permeation: Level  $\geq 6$  (480 min)

· **Eye protection:** Tightly sealed safety glasses.

· **Body protection:** Protective work clothing.

## 9 Physical and chemical properties:

· <b>Form:</b>	Powder
· <b>Colour:</b>	White
· <b>Odour:</b>	Odourless

· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	300°C Not applicable

· <b>Flash point:</b>	Not applicable
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· <b>Inflammability (solid, gaseous)</b>	Contact with combustible material may cause fire.
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# Material Safety Data Sheet

## According to 91/155 EEC

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**Product name: Manganese HR Set (Sodiumperiodate)**

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· <b>Density at 20°C</b>	3.194 g/cm <sup>3</sup>
· <b>Solubility in / Miscibility with Water:</b>	Soluble
· <b>pH-value at 20°C:</b>	4.7
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	0.0 %
· <b>Solids content:</b>	100.0 %

### 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** Explosive thermal decomposition
- **Materials to be avoided:**
  - organic substances
  - acids
  - metals
  - reducing agents
  - aluminium
- **Dangerous reactions** Reacts with powdered metals
- **Dangerous products of decomposition:**
  - sodium monoxide, iodine, hydrogen iodide
  - see chapter 5

### \* 11 Toxicological information

- **Acute toxicity:** Quantitative data on the toxicity of the preparation are not available.

#### · **LD/LC50 values that are relevant for classification:**

##### 7790-28-5 sodium periodate

Oral	LD50	264 mg/kg (rat)
	LD50 IPR	58 mg/kg (mouse)

- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Irritant effect.
- **Sensitization:** No sensitizing effect known.
- **Additional toxicological information:**
  - The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
  - Harmful
  - Irritant

### 12 Ecological information:

- **Information about elimination (persistence and degradability):**
- **Other information:**
  - Quantitative data on the ecological effect of this product are not available.
  - Does not cause biological oxygen deficit.
- **Ecotoxicological effects:**

#### · **Acquatic toxicity:**

##### 7757-82-6 sodium sulphate

EC50	2564 mg/l/48h (Daphnia magna)
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# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 15.02.2006

Reviewed on 15.02.2006

**Product name: Manganese HR Set ( Sodium periodate)**

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LC50	13500-14500 mg/l/96h (Pimephales promelas)
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**· Remark:**

Toxic for fish:  
sulphates > 7 g/l

· **Bacterial toxicity:** sulphates toxic > 2.5 g/l

· **General notes:**

Water hazard class 1 (German Regulation) (Self-assessment acc. VwVwS Annex 4): slightly hazardous for water.  
Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.  
Must not reach sewage water or drainage ditch undiluted or unneutralized.

### 13 Disposal considerations

· **Product:**

· **Recommendation**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.  
Hand over to disposers of hazardous waste.

· **European waste catalogue**

16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances
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· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

· **Recommended cleaning agent:** Water, if necessary with cleaning agent.

### 14 Transport information

· **ADR/GGVSE:** UN 3316 CHEMIE-TESTSATZ, 9, II

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· **ICAO/IMDG:** UN 3316 CHEMICAL KIT, 9, II      **EMS-Number:** F-A    S-P

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· **ICAO/IATA: Chemical KIT, 9, UN 3316, II**

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### \*15 Regulatory information

· **Designation according to EC guidelines:**

The product has been classified and labelled in accordance with EC Directives / Ordinance on Hazardous Materials (GefStoffV)

· **Code letter and hazard designation of product:**

Xn Harmful  
O Oxidising

· **Hazard-determining components of labelling:**

sodium periodate

· **Risk phrases:**

8 Contact with combustible material may cause fire.  
22 Harmful if swallowed.  
36/37/38 Irritating to eyes, respiratory system and skin.

· **Safety phrases:**

17 Keep away from combustible material.  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
36/37 Wear suitable protective clothing and gloves.  
60 This material and its container must be disposed of as hazardous waste.

· **National regulations**

· **Information about limitation of use:**

Employment restrictions concerning young persons must be observed.  
Employment restrictions concerning pregnant and lactating women must be observed.

### 16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant R-phrases**

22 Harmful if swallowed.  
36/37/38 Irritating to eyes, respiratory system and skin.  
8 Contact with combustible material may cause fire.

· **Department issuing data specification sheet: Department TSS, Dr. Manfred Kaul**

· **Data compared to the previous version altered.**