

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

Printing date 31.01.2006

Reviewed on 31.01.2006





### \* 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Total N Persulfate RGT
- **Catalogue number:** CW/53.03.70
- **Supplier:**  
Camlab Limited  
Camlab House, Norman Way, Over, Cambridge CB4 5WE  
United Kingdom  
Tel: +44 (0)1954 233100
- **Informing department:** Technical Support
- **Emergency information:**  
National Poisons Information Service, United kingdom  
Tel: 0870 600 6266 (24 hours) • <http://www.npis.org/>

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

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

- **Dangerous components:**

CAS: 7775-27-1 EINECS: 231-892-1	disodium peroxodisulphate	 Xn,  O; R 8-22-36/37/38-42/43	90-100%
CAS: 7727-21-1 EINECS: 231-781-8 EC Number: 016-061-00-1	potassium persulphate	 Xn,  O; R 8-22-36/37/38-42/43	5-10%

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

### \* 3 Hazards identification

- **Hazard designation:**



Xn Harmful  
O Oxidising

- **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.
- R 42/43 May cause sensitisation by inhalation and skin contact.

- **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.

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total N Persulfate RGT**

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(Contd. of page 1)

### \* 4 First aid measures

- **General information** Instantly remove any clothing soiled by the product.
- **After inhalation**  
Supply fresh air or oxygen; call for doctor.  
In case of unconsciousness bring patient into stable side position for transport.
- **After skin contact**  
Seek medical treatment.  
Instantly wash with water and soap and rinse thoroughly.
- **After eye contact**  
Rinse opened eye for several minutes under running water.  
Call a doctor immediately.
- **After swallowing**  
Rinse out mouth and then drink plenty of water.  
Induce vomiting and call for medical help.
- **Information for doctor**
- **The following symptoms may occur:**  
after inhalation:  
coughing  
mucous membrane irritation  
breathing difficulty  
allergic reactions  
after swallowing:  
gastric or intestinal trouble  
vomiting  
sickness  
irritation  
headache
- **Danger**  
Danger of pulmonary oedema.  
risk of airways sensitization  
risk of skin sensitization

### \* 5 Fire fighting measures

- **Suitable extinguishing agents** 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>)
- **Protective equipment:**  
Wear self-contained breathing apparatus.  
Wear full protective suit.
- **Additional information**  
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.  
Ensure adequate ventilation  
Avoid causing dust.  
Use breathing protection against the effects of fumes/dust/aerosol.
- **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.

(Contd. on page 3)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total N Persulfate RGT**


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(Contd. of page 2)

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 Ensure adequate ventilation.
 

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### \* 7 Handling and storage

- **Handling**
- **Information for safe handling:**
  - Thorough dedusting.
  - Work only in fume cupboard.
- **Information about protection against explosions and fires:**
  - Protect from heat.
  - Keep ignition sources away - Do not smoke.
  - Dust can combine with air to form an explosive mixture.
- **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.
- **Further information about storage conditions:**
  - Protect from heat and direct sunlight.
  - Keep container tightly sealed.
  - Store under dry conditions.
  - Protect from humidity and keep away from water.
  - 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.
  - 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
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(Contd. on page 4)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total N Persulfate RGT**


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(Contd. of page 3)

· <b>Colour:</b>	White
· <b>Odour:</b>	Odourless
· <b>Melting point/Melting range:</b>	> 100°C
· <b>Boiling point/Boiling range:</b>	Not applicable
· <b>Flash point:</b>	Not applicable
· <b>Inflammability (solid, gaseous)</b>	Contact with combustible material may cause fire.
· <b>Density at 20°C</b>	2.407 g/cm <sup>3</sup>
· <b>Solubility in / Miscibility with Water:</b>	Soluble
· <b>pH-value (25 g/l) at 20°C:</b>	4.5
· <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:** To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**
  - combustible substances
  - alcohols
  - reducing agents
- **Dangerous reactions**
  - Can react violently with oxygen rich (oxidizing) material. Explosive.
  - Risk of dust explosion
- **Dangerous products of decomposition:**
  - oxygen
  - 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:**

<b>7775-27-1 disodium peroxodisulphate</b>		
Oral	LD50	930 mg/kg (rat)
Inhalative	LC50/4 h	> 5100 mg/l (rat)
	LD50 IPR	226 mg/kg (mouse)
<b>7727-21-1 potassium persulphate</b>		
Oral	LD50	802 mg/kg (rat)

- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Irritant effect.
- **Sensitization:**
  - Sensitization possible by inhalation.
  - Sensitization possible by skin contact.
- **Subacute to chronic toxicity:**
  - CAS-No. 7775-27-1:
  - MERCK: Sensitization test (guinea pig): positiv (OECD 406)

(Contd. on page 5)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total N Persulfate RGT**


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(Contd. of page 4)

**· 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

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### \*12 Ecological information:

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

Quantitative data on the ecological effect of this product are not available.  
Methods for the determination of biodegradability are not applicable to inorganic substances.

**· Ecotoxicological effects:**
**· Aquatic toxicity:**

Reacts with water

<b>7775-27-1 disodium peroxodisulphate</b>	
EC50	133 mg/l/48h (Daphnia magna)
LC50	771 mg/l/96h (Lepomis macrochirus) 163 mg/l/96h (Onchorhynchus mykiss)
<b>7727-21-1 potassium persulphate</b>	
Daphnia EC50	357 mg/l/24h (Daphnia magna)
LC50	100 mg/l/96h (Poecilia reticulata)

**· Remark:**

Toxic for fish:  
sulphates > 7 g/l  
Reacts with water to form toxic decomposition products.

**· 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.

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### \*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 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.

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### \*14 Transport information

**· Land transport ADR/RID (cross-border)**


**· ADR/RID-GGVS/E Class:** 5.1 (O2) Oxidizing substances.

**· Kemler Number:** 50

(Contd. on page 6)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total N Persulfate RGT**


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(Contd. of page 5)

· <b>UN-Number:</b>	3215
· <b>Packaging group:</b>	III
· <b>Label</b>	5.1
· <b>Designation of goods:</b>	3215 PERSULPHATES, INORGANIC, N.O.S. (POTASSIUM PERSULPHATE, SODIUM PERSULPHATE)

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**· Maritime transport IMDG:**


· <b>IMDG Class:</b>	5.1
· <b>UN Number:</b>	3215
· <b>Label</b>	5.1
· <b>Packaging group:</b>	III
· <b>EMS Number:</b>	F-A,S-Q
· <b>Marine pollutant:</b>	No
· <b>Correct technical name:</b>	PERSULPHATES, INORGANIC, N.O.S.

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**· Air transport ICAO-TI and IATA-DGR:**


· <b>ICAO/IATA Class:</b>	5.1
· <b>UN/ID Number:</b>	3215
· <b>Label</b>	5.1
· <b>Packaging group:</b>	III
· <b>Correct technical name:</b>	PERSULPHATES, INORGANIC, N.O.S.

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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:**

disodium peroxodisulphate  
potassium persulphate

**· Risk phrases:**

8 Contact with combustible material may cause fire.  
22 Harmful if swallowed.  
36/37/38 Irritating to eyes, respiratory system and skin.  
42/43 May cause sensitisation by inhalation and skin contact.

**· Safety phrases:**

17 Keep away from combustible material.  
22 Do not breathe dust.  
24 Avoid contact with skin.  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
37 Wear suitable gloves.  
45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).  
60 This material and its container must be disposed of as hazardous waste.

(Contd. on page 7)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total N Persulfate RGT**

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(Contd. of page 6)

· **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.

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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**

22 Harmful if swallowed.

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

42/43 May cause sensitisation by inhalation and skin contact.

8 Contact with combustible material may cause fire.

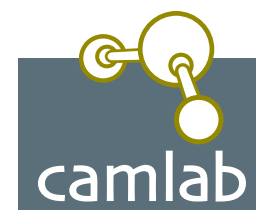
· **Department issuing data specification sheet:** Technical Department

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

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# Material Safety Data Sheet

## According to 91/155 EEC



Printing date 31.01.2006

Reviewed on 31.01.2006

### 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Total Nitrogen Reagent A
- **Catalogue number:** CW/53.03.80, CW/53.55.60
- **Supplier:**  
Camlab Limited  
Camlab House, Norman Way, Over, Cambridge CB4 5WE  
United Kingdom  
Tel: +44 (0)1954 233100
- **Informing department:** Technical Support
- **Emergency information:**  
National Poisons Information Service, United kingdom  
Tel: 0870 600 6266 (24 hours) • <http://www.npis.org/>

### 2 Composition/Data on components:

- **Chemical characterization:**
- **CAS No. Designation:**  
7681-57-4 disodium disulphite
- **Identification number(s):**
- **EINECS Number:** 231-673-0
- **EC Number:** 016-063-00-2

### 3 Hazards identification

- **Hazard designation:**



Xn Harmful

- **Information pertaining to particular dangers for man and environment**  
R 22 Harmful if swallowed.  
R 31 Contact with acids liberates toxic gas.  
R 41 Risk of serious damage to eyes.

### 4 First aid measures

- **General information** Instantly remove any clothing soiled by the product.
- **After inhalation** Supply fresh air; consult doctor in case of symptoms.
- **After skin contact**  
Instantly wash with water and soap and rinse thoroughly.  
If skin irritation continues, consult a doctor.
- **After eye contact**  
Rinse opened eye for several minutes under running water.  
Call a doctor immediately.
- **After swallowing**  
Drink copious amounts of water, induce vomiting.

(Contd. on page 2)

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# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total Nitrogen Reagent A**

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(Contd. of page 1)

Instantly call for doctor.

- **Information for doctor** Sulphites are strong sensitizers.
  - **The following symptoms may occur:**
    - after swallowing:
      - irritation
      - allergic reactions
      - profuse sweating
    - after inhalation:
      - coughing
      - mucous membrane irritation
      - breathing difficulty
- 

### 5 Fire fighting measures

- **Suitable extinguishing agents** 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>)
  - **Protective equipment:**
    - Wear full protective suit.
    - Wear self-contained breathing apparatus.
  - **Additional information**
    - 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:**
    - Put on breathing apparatus.
    - Wear protective equipment. Keep unprotected persons away.
  - **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.
- 

### 7 Handling and storage

- **Handling**
  - **Information for safe handling:** Thorough dedusting.
  - **Information about protection against explosions and fires:** The product is not flammable
  - **Storage**
  - **Requirements to be met by storerooms and containers:** Store in cool location.
  - **Information about storage in one common storage facility:**
    - Do not store together with acids.
    - Store away from oxidizing agents.
  - **Further information about storage conditions:**
    - Protect from heat and direct sunlight.
    - Store under dry conditions.
    - Protect from humidity and keep away from water.
    - Protect from the effects of light.
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— GB —  
(Contd. on page 3)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total Nitrogen Reagent A**


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(Contd. of page 2)

### \* 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:**

<b>7681-57-4 disodium disulphite</b>
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WEL (Great Britain)   Long-term value: 5 mg/m <sup>3</sup>
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- **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.

- **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.

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

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Penetration time of glove material**

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

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

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

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

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### 9 Physical and chemical properties:

· <b>Form:</b>	Powder
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· <b>Colour:</b>	Colourless
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· <b>Odour:</b>	Pungent
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· <b>Melting point/Melting range:</b>	150°C
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· <b>Boiling point/Boiling range:</b>	Not applicable
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· <b>Flash point:</b>	Not applicable
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· <b>Inflammability (solid, gaseous)</b>	Product is not inflammable.
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· <b>Danger of explosion:</b>	Product is not explosive.
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· <b>Density at 20°C</b>	1.48 g/cm <sup>3</sup>
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· <b>Settled apparent density at 20°C</b>	1100-1200 kg/m <sup>3</sup>
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· <b>Solubility in / Miscibility with Water at 20°C:</b>	650 g/l
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· <b>pH-value (50 g/l) at 20°C:</b>	4.5
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· <b>Organic solvents:</b>	0.0 %
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· <b>Solids content:</b>	100.0 %
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### 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** strong heating

(Contd. on page 4)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total Nitrogen Reagent A**


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(Contd. of page 3)

- **Materials to be avoided:**  
acids  
oxidizing agents  
--> forms heat
  - **Dangerous reactions** Contact with acids releases toxic gases
  - **Dangerous products of decomposition:**  
carbon monoxide and carbon dioxide  
Nitrogen oxides (NO<sub>x</sub>)  
Sulphur oxides (SO<sub>x</sub>)  
see chapter 5
- 

### \* 11 Toxicological information

- **Acute toxicity:**

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

<b>7681-57-4 disodium disulphite</b>		
Oral	LD50	1540 mg/kg (rat)

- **Primary irritant effect:**

- **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Strong irritant with the danger of severe eye injury.
  - **Sensitization:**  
Sensitizing effect by inhalation is possible by prolonged exposure.  
Sensitizing effect by skin contact is possible by prolonged exposure.
- 

### 12 Ecological information:

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

- **Other information:**

Methods for the determination of biodegradability are not applicable to inorganic substances.  
Does not cause biological oxygen deficit.

- **Ecotoxicological effects:**

- **Acquatic toxicity:**

<b>7681-57-4 disodium disulphite</b>		
EC50	89 mg/l/48h	(Daphnia magna)
LC50	150-220 mg/l/96h	(Onchorhynchus mykiss)

- **Remark:**

- **Algae toxicity:**

CAS No. 7681-57-4 Desmodesmus subspicatus IC50: 48mg/l/72 h

<b>7681-57-4 disodium disulphite</b>		
IC50	48 mg/l/72h	(Desmodesmus subspicatus)

- **Bacterial toxicity:**

CAS No. 7681-57-4 Pseudomonas putida EC50: 56 mg/l/17 h

<b>7681-57-4 disodium disulphite</b>		
EC50	56 mg/l/17h	(Pseudomonas putida)

- **Additional ecological information:**

- **COD-value:**

<b>7681-57-4 disodium disulphite</b>		
COD	0.168 g/g	(.)

- **General notes:**

Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water.

(Contd. on page 5)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total Nitrogen Reagent A**


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(Contd. of page 4)

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.

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### 13 Disposal considerations

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

<b>· European waste catalogue</b>	
16 05 07	discarded inorganic chemicals consisting of or containing dangerous substances

- **Uncleaned packagings:**
  - **Recommendation:** Disposal must be made according to official regulations.
  - **Recommended cleaning agent:** Water, if necessary with cleaning agent.
- 

### 14 Transport information

- |  |   |
|--|---|
| <b>· Land transport ADR/RID (cross-border)</b> |   |
| <b>· ADR/RID-GGVS/E Class:</b>                 | - |

- |                                   |    |
|-----------------------------------|----|
| <b>· Maritime transport IMDG:</b> |    |
| <b>· IMDG Class:</b>              | -  |
| <b>· Marine pollutant:</b>        | No |

- |  |   |
|--|---|
| <b>· Air transport ICAO-TI and IATA-DGR:</b> |   |
| <b>· ICAO/IATA Class:</b>                    | - |

- **Transport/Additional information:** Not dangerous according to the above specifications.
- 

### 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
  - **Risk phrases:**  
22 Harmful if swallowed.  
31 Contact with acids liberates toxic gas.  
41 Risk of serious damage to eyes.
  - **Safety phrases:**  
26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
39 Wear eye/face protection.  
46 If swallowed, seek medical advice immediately and show this container or label.
  - **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.

- **Department issuing data specification sheet:** Technical Department
  - **\* Data compared to the previous version altered.**
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## Material Safety Data Sheet According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

### \* 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Total Nitrogen Reagent B
- **Catalogue number:** CW/53.03.90, CW/53.55.60
- **Supplier:**  
Camlab Limited  
Camlab House, Norman Way, Over, Cambridge CB4 5WE  
United Kingdom  
Tel: +44 (0)1954 233100
- **Informing department:** Technical Support
- **Emergency information:**  
National Poisons Information Service, United kingdom  
Tel: 0870 600 6266 (24 hours) • <http://www.npis.org/>

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

- **Chemical characterization**
- **Description:** Preparation contains anorganic and organic compounds.

- **Dangerous components:**

CAS: 7681-57-4	disodium disulphite	<input checked="" type="checkbox"/> Xn; R 22-31-41	5-10%
EINECS: 231-673-0			
EC Number: 016-063-00-2			

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

### \* 3 Hazards identification

- **Hazard designation:**



Xi Irritant

- **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 31 Contact with acids liberates toxic gas.

R 41 Risk of serious damage to eyes.

- **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; consult doctor in case of symptoms.
- **After skin contact**  
Instantly rinse with water.  
If skin irritation continues, consult a doctor.

(Contd. on page 2)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total Nitrogen Reagent B**

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(Contd. of page 1)

- **After eye contact**  
Rinse opened eye for several minutes under running water.  
Call a doctor immediately.
- **After swallowing**  
Rinse out mouth and then drink plenty of water.  
Seek immediate medical advice.
- **Information for doctor** Sulphites are strong sensitizers.
- **The following symptoms may occur:**  
after swallowing:  
diarrhoea  
irritation  
allergic reactions  
after inhalation:  
coughing  
mucous membrane irritation  
breathing difficulty

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### \* 5 Fire fighting measures

- **Suitable extinguishing agents** 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>)
- **Protective equipment:**  
Wear self-contained breathing apparatus.  
Wear full protective suit.
- **Additional information**  
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.  
Ambient fire may liberate hazardous vapours.

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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.
- **Measures for environmental protection:** Do not allow product to reach sewage system or water bodies.
- **Measures for cleaning/collecting:**  
Collect mechanically.  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.

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### \* 7 Handling and storage

- **Handling**
- **Information for safe handling:** Thorough dedusting.
- **Information about protection against explosions and fires:** The product is not flammable
- **Storage**
- **Requirements to be met by storerooms and containers:** Store in cool location.
- **Information about storage in one common storage facility:**  
Do not store together with acids.  
Store away from oxidizing agents.
- **Further information about storage conditions:**  
Protect from heat and direct sunlight.

(Contd. on page 3)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

**Product name: Total Nitrogen Reagent B**

(Contd. of page 2)

Store under dry conditions.  
Protect from humidity and keep away from water.  
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:**

**7681-57-4 disodium disulphite**

WEL (Great Britain) Long-term value: 5 mg/m<sup>3</sup>

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

· **Personal protective equipment**

· **General protective and hygienic measures**

Take off immediately all contaminated clothing  
Wash hands during breaks and at the end of the work.  
Avoid contact with the eyes.

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

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

· **Protection of hands:**

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
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**

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

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

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

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

### \* 9 Physical and chemical properties:

· <b>Form:</b>	Crystalline powder
· <b>Colour:</b>	Whitish
· <b>Odour:</b>	Odourless
· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	Not determined
· <b>Flash point:</b>	Not applicable
· <b>Danger of explosion:</b>	Product is not explosive.
· <b>Density</b>	Not determined
· <b>Solubility in / Miscibility with Water:</b>	Partly soluble
· <b>pH-value:</b>	Not determined
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	0.0 %
· <b>Solids content:</b>	100.0 %

— GB —  
(Contd. on page 4)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

**Product name: Total Nitrogen Reagent B**

(Contd. of page 3)

### \* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** strong heating
- **Materials to be avoided:**
  - acids
  - oxidizing agents
  - > forms heat
- **Dangerous reactions** Contact with acids releases toxic gases
- **Dangerous products of decomposition:**
  - carbon monoxide and carbon dioxide
  - Nitrogen oxides (NOx)
  - Sulphur oxides (SOx)
  - see chapter 5

### \* 11 Toxicological information

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

<b>LD/LC50 values that are relevant for classification:</b>		
<b>57-13-6 urea</b>		
Oral	LD50	8471 mg/kg (rat)
Dermal	LD50	8200 mg/kg (rat)
<b>7681-57-4 disodium disulphite</b>		
Oral	LD50	1540 mg/kg (rat)

- **Primary irritant effect:**

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

- **on the eye:** Strong irritant with the danger of severe eye injury.

- **Sensitization:**

- Sensitizing effect by inhalation is possible by prolonged exposure.

- Sensitizing effect by skin contact is possible by prolonged exposure.

- **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:

- Irritant

### \* 12 Ecological information:

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

- **Other information:** Quantitative data on the ecological effect of this product are not available.

<b>Behaviour in environmental systems:</b>	
<b>57-13-6 urea</b>	
log P(o/w)	-1.59 (.)

- **Ecotoxicological effects:**

<b>Acquatic toxicity:</b>	
<b>57-13-6 urea</b>	
Daphnia EC50	> 10000 mg/l/24h (Daphnia magna)
LC50	> 6810 mg/l/96h (Leuciscus idus)
<b>7681-57-4 disodium disulphite</b>	
EC50	89 mg/l/48h (Daphnia magna)
LC50	150-220 mg/l/96h (Onchorhynchus mykiss)

(Contd. on page 5)



# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 31.01.2006

Reviewed on 31.01.2006

**Product name: Total Nitrogen Reagent B**

(Contd. of page 4)

**· Remark:**
**· Algae toxicity:**
**7681-57-4 disodium disulphite**

IC50 | 48 mg/l/72h (Desmodesmus subspicatus)

**· Bacterial toxicity:**
**7681-57-4 disodium disulphite**

EC50 | 56 mg/l/17h (Pseudomonas putida)

**· Additional ecological information:**
**· COD-value:**
**7681-57-4 disodium disulphite**

COD | 0.168 g/g (.)

**· General notes:**

Water danger class 3 (German Regulation) (Self-assessment acc. VwVwS Annex 4): extremely hazardous for water.

Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into soil.

### \* 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 06 | laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals

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

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

### 14 Transport information

**· Land transport ADR/RID (cross-border)**
**· ADR/RID-GGVS/E Class:** -

**· Maritime transport IMDG:**
**· IMDG Class:** -

**· Marine pollutant:** No

**· Air transport ICAO-TI and IATA-DGR:**
**· ICAO/IATA Class:** -

**· Transport/Additional information:** Not dangerous according to the above specifications.

### \* 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:**

Xi Irritant

**· Risk phrases:**

31 Contact with acids liberates toxic gas.

41 Risk of serious damage to eyes.

(Contd. on page 6)

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

Printing date 31.01.2006

Reviewed on 31.01.2006

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**Product name: Total Nitrogen Reagent B**

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(Contd. of page 5)

· **Safety phrases:**

- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- 39 Wear eye/face protection.
- 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.
- 

### 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.
- 31 Contact with acids liberates toxic gas.
- 41 Risk of serious damage to eyes.

- **Department issuing data specification sheet:** Technical Department

- **\* Data compared to the previous version altered.**
-

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

Printing date 01.02.2006

Reviewed on 01.02.2006

### \* 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** Total Nitrogen Acid LR/HR Vial
- **Catalogue number:** CW/53.04.00
- **Supplier:**  
Camlab Limited  
Camlab House, Norman Way, Over, Cambridge CB4 5WE  
United Kingdom  
Tel: +44 (0)1954 233100
- **Informing department:** Technical Support
- **Emergency information:**  
National Poisons Information Service, United kingdom  
Tel: 0870 600 6266 (24 hours) • <http://www.npis.org/>

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

- **Chemical characterization**
- **Description:** sulfuric acid solution

- **Dangerous components:**

CAS: 7664-93-9	sulphuric acid	 C; R 35	80-90%
EINECS: 231-639-5			
EC Number: 016-020-00-8			

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

### \* 3 Hazards identification

- **Hazard designation:**



C Corrosive

- **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 35 Causes severe burns.

- **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 or oxygen; call for doctor.
- **After skin contact**  
Wash with polyethylene glycol 400 and then rinse with copious amounts of water.  
Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.

(Contd. on page 2)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 01.02.2006

Reviewed on 01.02.2006

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**Product name: Total Nitrogen Acid LR/HR Vial**

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(Contd. of page 1)

- **After eye contact**
  - Rinse opened eye for several minutes under running water.
  - Call a doctor immediately.
- **After swallowing**
  - Rinse out mouth and then drink plenty of water.
  - Do not induce vomiting; instantly call for medical help.
- **Information for doctor**
- **The following symptoms may occur:**
  - after inhalation:
    - damage to the affected mucous membranes
    - coughing
    - breathing difficulty
  - after swallowing:
    - cramps
    - diarrhoea
    - pain
    - sickness
    - vomiting
- **Danger**
  - Danger of impaired breathing.
  - Danger of gastric perforation.
- **Treatment**
  - If swallowed or in case of vomiting, danger of entering the lungs
  - Subsequent observation for pneumonia and pulmonary oedema

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### 5 Fire fighting measures

- **Suitable extinguishing agents** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents** Water.
- **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.
  - nitrous gases
  - Sulphur oxides (SO<sub>x</sub>)
  - hydrogen
- **Protective equipment:**
  - Wear self-contained breathing apparatus.
  - Wear full protective suit.
- **Additional information**
  - 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.

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### 6 Accidental release measures

- **Person-related safety precautions:**
  - Wear protective equipment. Keep unprotected persons away.
  - Ensure adequate ventilation
- **Measures for environmental protection:** Do not allow product to reach sewage system or water bodies.
- **Measures for cleaning/collecting:**
  - Absorb with liquid-binding material (sand, diatomite, universal binders).
  - Neutralize with diluted sodium hydroxide solution or by throwing on lime sand, lime or sodium carbonate.
  - Dispose of contaminated material as waste according to item 13.
  - Ensure adequate ventilation.

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— GB —  
(Contd. on page 3)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 01.02.2006

Reviewed on 01.02.2006

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**Product name: Total Nitrogen Acid LR/HR Vial**


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(Contd. of page 2)

### \* 7 Handling and storage

- **Handling**
- **Information for safe handling:** Open and handle container with care.
- **Information about protection against explosions and fires:**
  - Protect from heat.
  - The product is not flammable
- **Storage**
- **Requirements to be met by storerooms and containers:** Store in cool location.
- **Information about storage in one common storage facility:**
  - Store away from water.
  - Store away from metals.
- **Further information about storage conditions:**
  - Keep container tightly sealed.
  - Store under dry conditions.
  - This product is hygroscopic.
  - Protect from heat and direct sunlight.

### \* 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.
  - Do not inhale gases / fumes / aerosols.
  - Avoid contact with the eyes and skin.
  - Do not eat, drink or smoke while working.
- **Breathing equipment:**
  - In case of brief exposure or low pollution use breathing filter apparatus. In case of intensive or longer exposure use breathing apparatus that is independent of circulating air.
- **Recommended filter device for short term use:** Filter B
- **Protection of hands:**
  - Acid resistant gloves
  - 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**
  - Butyl rubber, BR
  - Fluorocarbon rubber (Viton)
  - Recommended thickness of the material:  $\geq 0.7$  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:** Acid resistant protective clothing

### 9 Physical and chemical properties:

- |                  |       |
|------------------|-------|
| · <b>Form:</b>   | Fluid |
| · <b>Colour:</b> | Clear |

(Contd. on page 4)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 01.02.2006

Reviewed on 01.02.2006

**Product name: Total Nitrogen Acid LR/HR Vial**

(Contd. of page 3)

· <b>Odour:</b>	Recognizable
· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	Not determined
· <b>Flash point:</b>	Not applicable
· <b>Danger of explosion:</b>	Product is not explosive.
· <b>Density at 20°C</b>	1.748 g/cm <sup>3</sup>
· <b>Solubility in / Miscibility with Water:</b>	Fully miscible
· <b>pH-value at 20°C:</b>	< 1
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	0.0 %
<b>Water:</b>	< 20 %

### \*10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** strong heating
- **Materials to be avoided:**
  - ammonia
  - alkali compounds
  - alkalis
  - acids
  - metals
  - halogen compounds
  - combustible substances
  - organic solvents
  - nitriles
  - peroxides
  - oxidizing agents
- **Dangerous reactions**
  - Heating occurs when water is added
  - Corrosive action on metals
  - When diluting, always add acid to water, never vice versa
  - Reacts with metals forming hydrogen
  - Reacts with organic substances
  - Diluting or dissolving in water always causes rapid heating
  - Forms hydrogen in aqueous solution with metals
  - > Explosive
- **Dangerous products of decomposition:**
  - Hydrogen
  - nitrous gases
  - Sulphur oxides (SO<sub>x</sub>)

### 11 Toxicological information

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

· <b>LD/LC50 values that are relevant for classification:</b>		
<b>7664-93-9 sulphuric acid</b>		
Oral	LD50	2140 (25%) mg/kg (rat)
Inhalative	LC 50	510 (pure) mg/m <sup>3</sup> /2h (rat)

(Contd. on page 5)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 01.02.2006

Reviewed on 01.02.2006

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**Product name: Total Nitrogen Acid LR/HR Vial**


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(Contd. of page 4)

- **Primary irritant effect:**

- **on the skin:** Strong caustic effect on skin and mucous membranes.

- **on the eye:** Strong caustic 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:

Corrosive

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

---

### \*12 Ecological information:

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

- **Other information:** Inorganic substance. Does not cause biological oxygen deficit.

- **Ecotoxicological effects:**

- **Acquatic toxicity:**

**7664-93-9 sulphuric acid**

Daphnia EC50	29 mg/l/24h (Daphnia magna)
--------------	-----------------------------

- **Remark:**

Forms corrosive mixtures with water even if diluted.

Toxic for algae

- **Remark:** neutralization possible

- **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.

Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.

---

### 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 07	discarded inorganic chemicals consisting of or containing dangerous substances
----------	--

- **Uncleaned packagings:**

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

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

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### 14 Transport information

- **Land transport ADR/RID (cross-border)**



- **ADR/RID-GGVS/E Class:** 8 (C1) Corrosive substances.

- **Kemler Number:** 80

- **UN-Number:** 1830

- **Packaging group:** II

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(Contd. on page 6)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 01.02.2006



Reviewed on 01.02.2006

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**Product name: Total Nitrogen Acid LR/HR Vial**


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(Contd. of page 5)

<b>· Label</b>	8
<b>· Designation of goods:</b>	1830 SULPHURIC ACID
<b>· Maritime transport IMDG:</b>	
	
<b>· IMDG Class:</b>	8
<b>· UN Number:</b>	1830
<b>· Label</b>	8
<b>· Packaging group:</b>	II
<b>· EMS Number:</b>	F-A,S-B
<b>· Marine pollutant:</b>	No
<b>· Correct technical name:</b>	SULPHURIC ACID
<b>· Air transport ICAO-TI and IATA-DGR:</b>	
	
<b>· ICAO/IATA Class:</b>	8
<b>· UN/ID Number:</b>	1830
<b>· Label</b>	8
<b>· Packaging group:</b>	II
<b>· Correct technical name:</b>	SULPHURIC ACID

### \*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:**  
C Corrosive
- Hazard-determining components of labelling:**  
sulphuric acid
- Risk phrases:**  
35 Causes severe burns.
- Safety phrases:**
  - 20 When using do not eat or drink.
  - 23 Do not breathe fumes/aerosol.
  - 25 Avoid contact with eyes.
  - 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  - 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
  - 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
  - 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.

### 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.

(Contd. on page 7)



# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 01.02.2006

Reviewed on 01.02.2006

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**Product name: Total Nitrogen Acid LR/HR Vial**

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(Contd. of page 6)

- **Relevant R-phrases**  
35 Causes severe burns.
  - **Department issuing data specification sheet:** Technical Department
  - **\* Data compared to the previous version altered.**
- 

— GB —

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

Printing date 28.07.2005

Reviewed on 28.07.2005

### \* 1 Identification of substance:

- **Product details:** Reagent for water analysis
- **Product name:** **Total Nitrogen Hydroxide LR Vial**
- **Catalogue number:** CW/53.03.50, CW/53.55.50
- **Supplier:**  
Camlab Limited  
Camlab House, Norman Way, Over, Cambridge CB4 5WE  
United Kingdom  
Tel: +44 (0)1954 233100
- **Informing department:** Technical Support
- **Emergency information:**  
National Poisons Information Service, United kingdom  
Tel: 0870 600 6266 (24 hours) • <http://www.npis.org/>

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

- **Chemical characterization:** aqueous solution
- **Identification number(s):**
- **EINECS Number:** 231-791-2
- **Chemical characterization**

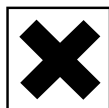
#### · **Dangerous components:**

CAS: 1310-73-2	sodium hydroxide		C; R 35	0.1-1.0%
EINECS: 215-185-5				
EC Number: 011-002-00-6				

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

### \* 3 Hazards identification

- **Hazard designation:**



Xi Irritant

- **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 36/38 Irritating to eyes 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 wash with water and soap and rinse thoroughly.

(Contd. on page 2)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 28.07.2005

Reviewed on 28.07.2005

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**Product name: Total Nitrogen Hydroxide LR Vial**

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(Contd. of page 1)

- **After eye contact** Rinse opened eye for several minutes under running water. Then consult doctor.
- **After swallowing**  
Rinse out mouth and then drink plenty of water.  
Seek medical treatment.
- **The following symptoms may occur:**  
after inhalation:  
coughing  
mucous membrane irritation  
breathing difficulty  
after swallowing:  
sickness  
irritation

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---

### \* 5 Fire fighting measures

- **Suitable extinguishing agents** 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.
- **Protective equipment:** Wear self-contained breathing apparatus.
- **Additional information**  
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.

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### \* 6 Accidental release measures

- **Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.
- **Measures for environmental protection:** Do not allow product to reach sewage system or water bodies.
- **Measures for cleaning/collecting:**  
Absorb with liquid-binding material (sand, diatomite, universal binders).  
Dispose of contaminated material as waste according to item 13.  
neutralize with diluted sulphuric acid
- **Additional information:** See Section 13 for information on disposal.

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### \* 7 Handling and storage

- **Handling**
- **Information for safe handling:** Prevent formation of aerosols.
- **Information about protection against explosions and fires:** The product is not flammable
- **Storage**
- **Requirements to be met by storerooms and containers:**  
Unsuitable material for container: aluminium.  
Store in cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**  
Keep container tightly sealed.  
Protect from heat and direct sunlight.  
Protect from humidity and keep away from water.  
Protect from the effects of light.
- **Storage class** Not required.

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### \* 8 Exposure controls and personal protection

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

(Contd. on page 3)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 28.07.2005

Reviewed on 28.07.2005

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**Product name: Total Nitrogen Hydroxide LR Vial**


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(Contd. of page 2)

- **Components with limit values that require monitoring at the workplace:** Not required.
  - **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.  
 Do not inhale gases / fumes / aerosols.  
 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 B
  - **Protection of hands:**  
 The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.  
 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  
 The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.  
 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:** Alkaline resistant protective clothing
- 

### \* 9 Physical and chemical properties:

· <b>Form:</b>	Fluid
· <b>Colour:</b>	Colourless
· <b>Odour:</b>	Odourless
· <b>Melting point/Melting range:</b>	Not determined
· <b>Boiling point/Boiling range:</b>	100°C
· <b>Flash point:</b>	Not applicable
· <b>Danger of explosion:</b>	Product is not explosive.
· <b>Density at 20°C</b>	1 g/cm <sup>3</sup>
· <b>Solubility in / Miscibility with Water:</b>	Fully miscible
· <b>pH-value at 20°C:</b>	13
· <b>Organic solvents:</b>	0.0 %
· <b>Water:</b>	> 99 %

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### \* 10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:** To avoid thermal decomposition do not overheat.
- **Materials to be avoided:**  
 acids  
 metals  
 zinc  
 NH<sub>x</sub>

(Contd. on page 4)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 28.07.2005

Reviewed on 28.07.2005

---

**Product name: Total Nitrogen Hydroxide LR Vial**


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(Contd. of page 3)

- **Dangerous reactions**
    - Corrosive action on metals
    - Corrodes aluminium
    - Reacts with metals forming hydrogen
  - **Dangerous products of decomposition:**
    - ammonia
    - 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:**

<b>1310-73-2 sodium hydroxide</b>		
Oral	LD50	2000 mg/kg (rat)

- **Primary irritant effect:**
    - on the skin:** Irritant to skin and mucous membranes.
    - on the eye:** Irritant effect.
  - **Sensitization:** No sensitizing effect known.
- 

### \* 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:**

- **Aquatic toxicity:**

<b>1310-73-2 sodium hydroxide</b>		
LC 50	189 mg/l	(fish)

- **Remark:** Forms corrosive mixtures with water even if diluted.
  - **General notes:**
    - Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms.
    - Generally not hazardous for water.
- 

### \* 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 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.
- 

— GB —  
(Contd. on page 5)

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 28.07.2005

Reviewed on 28.07.2005

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**Product name: Total Nitrogen Hydroxide LR Vial**


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(Contd. of page 4)

### \* 14 Transport information

#### · Land transport ADR/RID (cross-border)



- ADR/RID-GGVS/E Class: 8 (C5) Corrosive substances.
- Kemler Number: 80
- UN-Number: 1824
- Packaging group: III
- Label: 8
- Designation of goods: 1824 SODIUM HYDROXIDE SOLUTION

#### · Maritime transport IMDG:



- IMDG Class: 8
- UN Number: 1824
- Label: 8
- Packaging group: III
- EMS Number: F-A,S-B
- Marine pollutant: No
- Correct technical name: SODIUM HYDROXIDE SOLUTION

#### · Air transport ICAO-TI and IATA-DGR:



- ICAO/IATA Class: 8
- UN/ID Number: 1824
- Label: 8
- Packaging group: III
- Correct technical name: SODIUM HYDROXIDE SOLUTION

### \* 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:

Xi Irritant

#### · Risk phrases:

36/38 Irritating to eyes and skin.

#### · Safety phrases:

23 Do not breathe fumes/aerosol.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

37 Wear suitable gloves.

60 This material and its container must be disposed of as hazardous waste.

#### · National regulations

- Water hazard class: Generally not hazardous for water.

# Material Safety Data Sheet

## According to 91/155 EEC

Printing date 28.07.2005

Reviewed on 28.07.2005

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**Product name: Total Nitrogen Hydroxide LR Vial**

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(Contd. of page 5)

### 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**  
35 Causes severe burns.
- **Department issuing data specification sheet:** Technical Department
- **\* Data compared to the previous version altered.**