

# Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue: 27.04.2004  
Supersedes edition of 14.12.1999

## 1. Identification of the substance/preparation and of the company/undertaking

### Identification of the product

Catalogue No.: 114942  
Product name: Nitrate test in seawater Method: photometric 0.2 - 17.0 mg/l NO<sub>3</sub>-N  
50 Tests  
0.9 - 75.3 mg/l NO<sub>3</sub><sup>-</sup> Spectroquant®  
NO<sub>3</sub>-1

### Use of the substance/preparation

Reagent for analysis

### Company/undertaking identification

Company: Merck KGaA \* 64271 Darmstadt \* Germany \* Tel: +49 (0)6151/72-0  
Emergency telephone No.: +49 (0)6151/72112 \* Fax: +49 (0)6151/72-7780

## 2. Composition/information on ingredients

Aqueous solution.

### Hazardous ingredients:

#### Name according to EC Directives:

CAS-No.	EC No.	EC-Index-No.	Classification	Content:
Sulphuric acid 7664-93-9	231-639-5	016-020-00-8	C; R35	≥ 50 %

(Full text of R-Phrases in heading 16)

## 3. Hazards identification

Causes severe burns.

## 4. First aid measures

After inhalation: fresh air. Call in physician.  
After skin contact: wash off with plenty of water. Dab with polyethylene glycol 400.  
Immediately remove contaminated clothing.  
After eye contact: rinse out with plenty of water for at least 10 minutes with the eyelid held wide open. Immediately call in ophthalmologist.  
After swallowing: make victim drink plenty of water (if necessary several litres), avoid vomiting (risk of perforation!). Immediately call in physician. Do not attempt to neutralize.

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## 5. Fire-fighting measures

Suitable extinguishing media:  
In adaption to materials stored in the immediate neighbourhood.

Special risks:  
Non-combustible. Ambient fire may liberate hazardous vapours. The following may develop in event of fire: sulfur oxides.

Special protective equipment for fire fighting:  
Do not stay in dangerous zone without self-contained breathing apparatus. In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

Other information:  
Contain escaping vapours with water. Prevent fire-fighting water from entering surface water or groundwater.

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## 6. Accidental release measures

Person-related precautionary measures:  
Do not inhale vapours/aerosols. Avoid substance contact. Ensure supply of fresh air in enclosed rooms.

Environmental-protection measures:  
Do not allow to enter sewerage system.

Procedures for cleaning / absorption:  
Take up with liquid-absorbent and neutralizing material (e.g. Chemisorb® H<sup>+</sup>, Art. No. 101595). Forward for disposal. Clean up affected area.

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## 7. Handling and storage

*Handling:*

No further requirements.

*Storage:*

Tightly closed. At +15°C to +25°C.

The data apply to the entire pack.

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## 8. Exposure controls/personal protection

*Specific control parameter*

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## TRGS 900

Name	Sulfuric acid
Kind of use	others
Value	0.1 mg/m <sup>3</sup> Inhalable fraction. The following regulation applies to the peak limit: short-term exposure duration: max. 15 minutes as mean value, frequency per shift: 4, time interval: min. 1 hour
Peak limit	1 Concentration must not exceed limit concentration.
Embryotoxic	Y Substances with which no foetotoxic risk is to be expected when observing the maximum allowable concentration (MAC Germany) and the biological tolerance value at the workplace (BAT Germany).

### Personal protective equipment:

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: required when vapours/aerosols are generated.

Eye protection: required

Hand protection:

In full contact:

Glove material: viton  
Layer thickness: 0.70 mm  
Breakthrough time: > 480 Min.

In splash contact:

Glove material: butyl rubber  
Layer thickness: 0.7 mm  
Breakthrough time: > 120 Min.

The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN374, for example KCL 890 Vitoject® (full contact), 898 Butoject® (splash contact).

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Industrial hygiene:

Change contaminated clothing and immerse in water. Apply skin-protective barrier cream. Wash hands and face after working with substance.

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## 9. Physical and chemical properties

Form:	liquid
Colour:	colourless
Odour:	odourless
pH value	(20 °C) strongly acid
Melting point	not available

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NO<sub>3</sub>-1

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Boiling point		not available
Ignition temperature		not available
Flash point		not available
Explosion limits	lower	not available
	upper	not available
Density	(20 °C)	~ 1.778 g/cm <sup>3</sup>
Solubility in water	(20 °C)	soluble (caution ! development of heat)

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## 10. Stability and reactivity

### *Conditions to be avoided*

Strong heating.

### *Substances to be avoided*

water, alkali metals, alkali compounds, ammonia, alkaline earth metals, alkaline earth compounds, alkalis, acids, metals, metal alloys, phosphorus oxides, phosphorus, hydrides, halogen-halogen compounds, oxyhalogenic compounds, permanganates, nitrates, carbides, combustible substances, organic solvents, acetylidene, nitriles, nitrides, organic nitro compounds, anilines, peroxides, picrates, lithium silicide.

### *Hazardous decomposition products*

in the event of fire: See chapter 5.

### *Further information*

hygroscopic; has a corrosive effect;  
incompatible with metals, animal/vegetable tissues.

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## 11. Toxicological information

### *Acute toxicity*

LC<sub>50</sub> (inhalation, rat): 510 mg/m<sup>3</sup> /2 h (calculated on the pure substance).  
LD<sub>50</sub> (oral, rat): 2140 mg/kg ( Using 25 % solution ).

Specific symptoms in animal studies:

Eye irritation test (rabbit): burns.

Skin irritation test (rabbit): burns.

Toxicologic values are not available due to other dangerous properties of the substance.

### *Subacute to chronic toxicity*

Bacterial mutagenicity: Ames test: negative.

No teratogenic effect in animal experiments.

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## *Further toxicological information*

Property that must be anticipated on the basis from the components of the preparation:

After inhalation of aerosols: damage to the affected mucous membranes.

After skin contact: severe burns with formation of scabs.

After eye contact: burns, corneal lesions.

After swallowing: severe pain (risk of perforation!), nausea, vomiting and diarrhoea.

After a latency period of several weeks possibly pyloric stenosis.

## *Further data*

The product should be handled with the care usual when dealing with chemicals.

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## 12. Ecological information

Biologic degradation:

Methods for the determination of biodegradability are not applicable to inorganic substances.

Behavior in environmental compartments:

Concentration in organisms is not to be expected.

Ecotoxic effects:

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

Further ecologic data:

The following applies to sulfuric acid: biological effects: harmful effect on aquatic organisms.

Harmful effect due to pH shift. Toxic effect on fish and algae. Caustic even in diluted form.

Does not cause biological oxygen deficit. Endangers drinking-water supplies if allowed to enter soil and/or waters in large quantities. Neutralization possible in waste water treatment plants.

Daphnia toxicity: Daphnia magna EC<sub>50</sub>: 29 mg/l/24 h (calculated on the pure substance).

Do not allow to enter waters, waste water, or soil!

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## 13. Disposal considerations

*Product:*

Chemicals must be disposed of in compliance with the respective national regulations. Under [www.retrologistik.de](http://www.retrologistik.de) you will find country- and substance-specific information as well as contact partners.

*Packaging:*

Merck product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system. Under [www.retrologistik.de](http://www.retrologistik.de) you will find special information on the respective national conditions as well as contact partners.

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## 14. Transport information

Road & Rail ADR, RID  
UN 3316 CHEMIE-TESTSATZ, 9, II

Inland waterway ADN, ADNR not tested

Sea IMDG-Code  
UN 3316 CHEMICAL KIT, 9, II  
Ems F-A S-P

Air CAO, PAX  
CHEMICAL KIT, 9, UN 3316, II

The transport regulations are cited according to international regulations and in the form applicable in Germany. Possible national deviations in other countries are not considered.  
**THESE TRANSPORT DATA APPLY TO THE ENTIRE PACK !**

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## 15. Regulatory information

*Labelling according to EC Directives*

Symbol:	C	Corrosive
R-phrases:	35	Causes severe burns.
S-phrases:	26-30-36/37/39-45	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

contains: Sulphuric acid

*German regulations*

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 4

Storage class VCI 8 B

Data sheet of the Chemical Professional Association M004 Irritant substances/corrosive substances  
M051 Dangerous chemical substances

The employment restrictions for young workers in accordance with section 22 of the Youth Employment Protection Law (JArbSchG) are to be observed.

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## 16. Other information

Text of any R phrases referred to under heading 2:

35 Causes severe burns.

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## *Reason for alteration*

Chapter 14: transport information.

General update.

## *Contact for information:*

HSSE-C/CI \* Tel: +49 (0)6151/722775 \* Fax: +49 (0)6151/726433 \* e-mail:prodsafe@merck.de

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*The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.*

# Safety Data Sheet

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0.9 - 75.3 mg/l NO<sub>3</sub><sup>-</sup> Spectroquant®  
NO<sub>3</sub>-2

### *Use of the substance/preparation*

Reagent for analysis

### *Company/undertaking identification*

Company: Merck KGaA \* 64271 Darmstadt \* Germany \* Tel: +49 (0)6151/72-0  
Emergency telephone No.: +49 (0)6151/72112 \* Fax: +49 (0)6151/72-7780

## 2. Composition/information on ingredients

Aqueous solution of inorganic compounds.

## 3. Hazards identification

No hazardous product as specified in Directive 67/548/EEC.

## 4. First aid measures

After inhalation: fresh air.  
After skin contact: wash off with plenty of water. Remove contaminated clothing.  
After eye contact: rinse out with plenty of water with the eyelid held wide open.  
After swallowing (large amounts): consult doctor if feeling unwell.

## 5. Fire-fighting measures

Suitable extinguishing media:  
In adaption to materials stored in the immediate neighbourhood.

Special risks:  
Non-combustible.

Other information:  
Prevent fire-fighting water from entering surface water or groundwater.



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0.9 - 75.3 mg/l NO<sub>3</sub><sup>-</sup> Spectroquant®  
NO<sub>3</sub>-2

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## 6. Accidental release measures

Person-related precautionary measures:  
Do not inhale vapours/aerosols.

Environmental-protection measures:  
Do not allow to enter sewerage system.

Procedures for cleaning / absorption:  
Take up with liquid-absorbent material (e.g. Chemizorb®). Forward for disposal. Clean up affected area.

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## 7. Handling and storage

*Handling:*

No further requirements.

*Storage:*

Tightly closed. At +15°C to +25°C.

The data apply to the entire pack.

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## 8. Exposure controls/personal protection

*Personal protective equipment:*

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: required when vapours/aerosols are generated.

Eye protection: required

Hand protection: not required

Industrial hygiene:  
Wash hands after working with substance.

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## 9. Physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	odourless	
pH value	(20 °C)	~ 6
Melting point		not available
Boiling point		not available
Ignition temperature		not available
Flash point		not available
Explosion limits	lower	not available
	upper	not available

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Density (20 °C) ~ 1.05 g/cm<sup>3</sup>  
Solubility in water soluble

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## 10. Stability and reactivity

*Conditions to be avoided*

none

*Substances to be avoided*

The generally known reaction partners of water.

*Hazardous decomposition products*

no information available

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## 11. Toxicological information

*Acute toxicity*

Quantitative data on the toxicity of this product are not available.

*Further toxicological information*

No toxic effects are to be expected when the product is handled appropriately.

*Further data*

The product should be handled with the care usual when dealing with chemicals.

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## 12. Ecological information

Ecotoxic effects:

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

Further ecologic data:

No ecological problems are to be expected when the product is handled and used with due care and attention.

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## 13. Disposal considerations

*Product:*

Chemicals must be disposed of in compliance with the respective national regulations. Under [www.retrologistik.de](http://www.retrologistik.de) you will find country- and substance-specific information as well as contact partners.

*Packaging:*

Merck product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system. Under [www.retrologistik.de](http://www.retrologistik.de) you will find special information on the respective national conditions as well as contact partners.

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Tests  
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NO<sub>3</sub>-2

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## 14. Transport information

Road & Rail ADR, RID  
UN 3316 CHEMIE-TESTSATZ, 9, II  
Inland waterway ADN, ADNR not tested  
Sea IMDG-Code  
UN 3316 CHEMICAL KIT, 9, II  
Ems F-A S-P  
Air CAO, PAX  
CHEMICAL KIT, 9, UN 3316, II

The transport regulations are cited according to international regulations and in the form applicable in Germany. Possible national deviations in other countries are not considered.  
**THESE TRANSPORT DATA APPLY TO THE ENTIRE PACK !**

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## 15. Regulatory information

*Labelling according to EC Directives*

Symbol: ---  
R-phrases: ---  
S-phrases: ---

*German regulations*

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 4  
Storage class VCI 10-13

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## 16. Other information

*Reason for alteration*

Chapter 14: transport information.

General update.

*Contact for information:*

HSSE-C/CI \* Tel: +49 (0)6151/722775 \* Fax: +49 (0)6151/726433 \* e-mail:prodsafe@merck.de

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### Use of the substance/preparation

Reagent for analysis

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Emergency telephone No.: +49 (0)6151/72112 \* Fax: +49 (0)6151/72-7780

## 2. Composition/information on ingredients

CAS-No.:	108-46-3	EC-Index-No.:	604-010-00-1
M:	110.11 g/mol	EC-No.:	203-585-2
Formula Hill:	C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>		
Chemical formula:	C <sub>6</sub> H <sub>4</sub> (OH) <sub>2</sub>		

## 3. Hazards identification

Harmful if swallowed. Irritating to eyes and skin. Very toxic to aquatic organisms.

## 4. First aid measures

After inhalation: fresh air.  
After skin contact: wash off with plenty of water. Remove contaminated clothing.  
After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist.  
After swallowing: immediately make victim drink plenty of water. Call in physician.

## 5. Fire-fighting measures

Suitable extinguishing media:  
Water, CO<sub>2</sub>, foam, powder.

Special risks:  
Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.

Special protective equipment for fire fighting:  
Do not stay in dangerous zone without self-contained breathing apparatus. In order to avoid contact with skin, keep a safety distance and wear suitable protective clothing.

Other information:  
Prevent fire-fighting water from entering surface water or groundwater.

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0.9 - 75.3 mg/l NO<sub>3</sub><sup>-</sup> Spectroquant®  
NO<sub>3</sub>-3

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## 6. Accidental release measures

Person-related precautionary measures:

Avoid substance contact. Avoid generation of dusts; do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

Environmental-protection measures:

Do not allow to enter sewerage system.

Procedures for cleaning / absorption:

Take up dry. Forward for disposal. Clean up affected area.

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## 7. Handling and storage

*Handling:*

Protect from light.

*Storage:*

Tightly closed. Dry. At +15°C to +25°C.

The data apply to the entire pack.

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## 8. Exposure controls/personal protection

*Specific control parameter*

TRGS 900

Name	1,3-Dihydroxybenzene
Value	10 ml/m <sup>3</sup>
	45 mg/m <sup>3</sup>

*Personal protective equipment:*

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Respiratory protection: required when dusts are generated.

Eye protection: required

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NO<sub>3</sub>-3

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Hand protection:

In full contact:  
Glove material: nitrile rubber  
Layer thickness: 0.11 mm  
Breakthrough time: > 480 Min.

In splash contact:  
Glove material: nitrile rubber  
Layer thickness: 0.11 mm  
Breakthrough time: > 480 Min.

The protective gloves to be used must comply with the specifications of EC directive 89/686/EEC and the resultant standard EN374, for example KCL 740 Dermatril® (full contact), 740 Dermatril® (splash contact). The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

## Industrial hygiene:

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

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## 9. Physical and chemical properties

Form:	solid		
Colour:	white		
Odour:	unpleasant		
pH value at 100 g/l H <sub>2</sub> O	(20 °C)	~ 4-6	
Melting point		109-111 °C	
Boiling point	(1013 hPa)	281 °C	
Ignition temperature		605 °C	
Flash point		127 °C	c.c.
Explosion limits	lower	not available	
	upper	not available	
Vapour pressure	(20 °C)	0.1 hPa	
Relative vapour density		3.79	
Density	(20 °C)	~ 1.28 g/cm <sup>3</sup>	
Bulk density		~ 600-700 kg/m <sup>3</sup>	
Solubility in water	(20 °C)	1000 g/l	
log Pow:	(20 °C)	0.93	(experimental)

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## 10. Stability and reactivity

### *Conditions to be avoided*

Above melting point.

### *Substances to be avoided*

ammonia, bases, amines, organic nitro compounds, nitric acid, metallic salts (iron), strong oxidizing agents.

### *Hazardous decomposition products*

no information available

### *Further information*

combustible, highly reactive, sensitive to air, light-sensitive, dust explosion possible.  
Explosible with air in a vaporous/gaseous state when heated.

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## 11. Toxicological information

### *Acute toxicity*

LD<sub>50</sub> (dermal, rabbit): 3360 mg/kg.

LD<sub>50</sub> (oral, rat): 301 mg/kg.

LDLo (oral, human): 29 mg/kg.

Specific symptoms in animal studies:

Eye irritation test (rabbit): Severe irritations.

Skin irritation test (rabbit): Irritations.

### *Subacute to chronic toxicity*

Bacterial mutagenicity: Ames test: negative.

Mutagenicity (mammal cell test): micronucleus negative.

### *Further toxicological information*

After inhalation of dust: Irritation symptoms in the respiratory tract. coughing, dyspnoea.

After skin contact: Irritations. Danger of skin absorption.

After eye contact: Severe irritations.

After swallowing: absorption, mucosal irritations.

Systemic effects: CNS disorders. Risk of methaemoglobin formation with headache, cardiac dysrhythmia, drop in blood pressure, dyspnoea and spasms, principal symptom: cyanosis (blue discoloration of the blood).

Causes impaired function of: thyroid.

Damage of: liver, kidneys, heart.

Other notes:

Sensitization possible in predisposed persons.

### *Further data*

The product should be handled with the care usual when dealing with chemicals.

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## 12. Ecological information

Biologic degradation:  
Biodegradation: 66.7 % /14 d.  
Readily biodegradable.

Behavior in environmental compartments:  
Distribution: log p(o/w): 0.93 (20 °C) (experimental).  
No bioaccumulation is to be expected (log P(o/w) <1).

Ecotoxic effects:  
Biological effects:  
Highly toxic for aquatic organisms. Formation of health-hazardous mixtures possible with water.  
Fish toxicity: *L. idus* LC<sub>50</sub>: 31.6 mg/l /96 h.  
Daphnia toxicity: *Daphnia magna* EC<sub>50</sub>: 1.28 mg/l /48 h.  
Algal toxicity: *Chlorella vulgaris* IC<sub>50</sub>: 605 mg/l /6 h.  
Bacterial toxicity: *Photobacterium phosphoreum* EC<sub>50</sub>: 264 mg/l /30 min microtox test.

The literature data available to us do not conform with the labelling prescribed by the EC. The EC has dossiers which have not been published.

Further ecologic data:  
BOD 61 % from TOD /5 d. COD 100 % from TOD. TOD: 1.89 g/g.

Do not allow to enter waters, waste water, or soil!

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## 13. Disposal considerations

*Product:*

Chemicals must be disposed of in compliance with the respective national regulations. Under [www.retrologistik.de](http://www.retrologistik.de) you will find country- and substance-specific information as well as contact partners.

*Packaging:*

Merck product packaging must be disposed of in compliance with the country-specific regulations or must be passed to a packaging return system. Under [www.retrologistik.de](http://www.retrologistik.de) you will find special information on the respective national conditions as well as contact partners.

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## 14. Transport information

Road & Rail ADR, RID  
UN 3316 CHEMIE-TESTSATZ, 9, II  
Inland waterway ADN, ADNR not tested  
Sea IMDG-Code  
UN 3316 CHEMICAL KIT, 9, II  
Ems F-A S-P

Air CAO, PAX  
CHEMICAL KIT, 9, UN 3316, II

The transport regulations are cited according to international regulations and in the form applicable in Germany. Possible national deviations in other countries are not considered.  
**THESE TRANSPORT DATA APPLY TO THE ENTIRE PACK !**



# Merck Safety Data Sheet

According to EC Directive 91/155/EEC

Catalogue No.: 114942  
Product name: Nitrate test in seawater Method: photometric 0.2 - 17.0 mg/l NO<sub>3</sub>-N 50  
Tests  
0.9 - 75.3 mg/l NO<sub>3</sub><sup>-</sup> Spectroquant®  
NO<sub>3</sub>-3

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## 15. Regulatory information

### *Labelling according to EC Directives*

Symbol:	Xn N	Harmful Dangerous for the environment
R-phrases:	22-50	Harmful if swallowed. Very toxic to aquatic organisms.
S-phrases:	---	
EC-No.:	203-585-2	EC label
contains:	Resorcinol	

### *German regulations*

Water pollution class 1 (slightly polluting substance) VwVwS Anh. 2 KennNr. 1599

Storage class VCI 10-13

Data sheet of the Chemical Professional Association M050 Dealing with harmful substances

M004 Irritant substances/corrosive substances

Local regulations on chemical accidents: 9a

The employment restrictions for young workers in accordance with section 22 of the Youth Employment Protection Law (JArbSchG) are to be observed.

The employment restrictions for expectant and nursing mothers in accordance with sections 4 and 5 of the Maternity Protection Guideline (MuSchRiV) are to be observed.

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## 16. Other information

Reduced labelling on the container due to small quantity.

### *Reason for alteration*

Chapter 14: transport information.

General update.

### *Contact for information:*

HSSE-C/CI \* Tel: +49 (0)6151/722775 \* Fax: +49 (0)6151/726433 \* e-mail:prodsafe@merck.de

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*The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.*