

Safety Data Sheet

According to EC Directive 91/155/EEC

Date of issue: 23.04.2004 Supersedes edition of 24.11.1999

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

Identification of the product

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l

N 25 Tests Spectroquant®

Reaktionsküvette

Use of the substance/preparation

Reagent for analysis

Company/undertaking identification

Merck KGaA * 64271 Darmstadt * Germany * Tel: +49 (0)6151/72-0 Company:

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

2. **Composition/information on ingredients**

Mixture of acids.

Hazardous ingredients:

Name according to EC Directives:

EC No. CAS-No. EC-Index-No. Classification Content:

Sulphuric acid

7664-93-9 231-639-5 016-020-00-8 C; R35 ≥ 25 - < 50 %

Phosphoric acid

7664-38-2 C; R34 231-633-2 015-011-00-6 ≥ 25 - < 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 ophtalmologist.

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.

According to EC Directive 91/155/EEC

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Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant® Reaktionsküvette

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, phosphorus 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.

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. Chemizorb® H⁺, Art. No. 101595). Forward for disposal. Clean up affected area.

7. Handling and storage

Handling:

No further requirements.

Storage:

Tightly closed. At $+15^{\circ}$ C to $+25^{\circ}$ C.

The data apply to the entire pack.

8. Exposure controls/personal protection

Specific control parameter

EC

Name ortho-Phosphoric acid

Value 1 mg/m³

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

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TRGS 900

Name Sulfuric acid
Kind of use others
Value 0.1 mg/m³

0.1 mg/m³ 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).

Name ortho-Phosphoric acid

Value 1 mg/m^3

Peak limit 2 exceeding factor: 2-fold in 15 minutes

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: natural latex
Layer thickness: 0.6 mm
Breakthrough time: > 480 Min.

In splash contact:

Glove material: natural latex
Layer thickness: 0.6 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 706 Lapren® (full contact), 706 Lapren® (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).

Other protective equipment:

Acid-resistant protective clothing.

Industrial hygiene:

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

According to EC Directive 91/155/EEC

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Tests Spectroquant® Reaktionsküvette

9. Physical and chemical properties

Form: liquid
Colour: colourless
Odour: odourless

pH value strongly acid

Melting point not available
Boiling point not available
Ignition temperature not available
Flash point not available
Explosion limits lower not available
upper not available

Density $(20 \,^{\circ}\text{C})$ $\sim 1.73 \, \text{g/cm}^3$

Solubility in

water (25 °C) soluble

10. Stability and reactivity

Conditions to be avoided

Strong heating.

Substances to be avoided

water, alkali metals, alkali compounds, ammonia, alkaline earth metals, alkalis, acids, alkaline earth compounds, 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

has a corrosive effect;

incompatible with metals, animal/vegetable tissues.

11. Toxicological information

Acute toxicity

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

According to EC Directive 91/155/EEC

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Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant® Reaktionsküvette

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

Further hazardous properties cannot be excluded.

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

12. Ecological information

Ecotoxic effects:

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

Further ecologic data:

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

The following applies to sulfuric acid: biological effects: harmfull 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_{50} : 29 mg/l/24 h (calculated on the pure substance).

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

13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under 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 you will find special information on the respective national conditions as well as contact partners.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

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Tests Spectroquant® Reaktionsküvette

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!

15. Regulatory information

Labelling according to EC Directives

Symbol: C Corrosive

R-phrases: 35 Causes severe burns.

S-phrases: 26-36/37/39-45 In case of contact with eyes.

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

Phosphoric 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.

16. Other information

Text of any R phrases referred to under heading 2:

34 Causes burns.

35 Causes severe burns.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®
Reaktionsküvette

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

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

According to EC Directive 91/155/EEC

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N 25 Tests Spectroquant®

N-1K

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

Mixture of inorganic compounds.

Hazardous ingredients:

Name according to EC Directives:

CAS-No. EC No. EC-Index-No. Classification Content:

Potassium persulfate

7727-21-1 231-781-8 016-061-00-1 O; R8 $\geq 50 \%$ Xn; R22-42/43

Xi; R36/37/38

Potassium carbonate

584-08-7 209-529-3 Xi; R36/37/38 $\geq 20 - < 50 \%$

(Full text of R-Phrases in heading 16)

3. Hazards identification

Contact with combustible material may cause fire. Harmful if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact.

4. First aid measures

After inhalation: fresh air. Consult doctor if feeling unwell.

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

ophtalmologist.

After swallowing: immediately make victim drink plenty of water. Call in physician.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-1K

5. Fire-fighting measures

Suitable extinguishing media:

In adaption to materials stored in the immediate neighbourhood.

Special risks:

Non-combustible. Fire-promoting. Keep away from combustible materials. Development of hazardous combustion gases or vapours possible in the event of fire. 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.

6. Accidental release measures

Person-related precautionary measures:

Avoid inhalation of dusts. 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 dry. Forward for disposal. Clean up affected area. Avoid generation of dusts.

7. Handling and storage

Handling:

Notes for safe handling:

Work under hood. Do not inhale substance.

Storage:

Tightly closed. At $+15^{\circ}$ C to $+25^{\circ}$ C.

The data apply to the entire pack.

8. Exposure controls/personal protection

Specific control parameter

EC

Name Potassium peroxodisulphate

Sensitization Sah Danger of sensitization of the airways and the skin

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.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-1K

Respiratory protection: required when dusts are generated.

Eye protection: required

In full contact: Hand protection:

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

In splash contact:

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

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).

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).

Industrial hygiene:

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

9. Physical and chemical properties

Form: solid Colour: white Odour: odourless

pH value not available Melting point not available Boiling point not available Ignition temperature not available Flash point not available **Explosion limits** not available lower not available upper

Density not available

Bulk density 750-800 kg/m^3

Solubility in

water (25 °C) soluble Thermal decomposition > 100 °C

According to EC Directive 91/155/EEC

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Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-1K

10. Stability and reactivity

Conditions to be avoided

warmth/heat

Substances to be avoided

water, bases, strong alkalis, acids, metals, heavy metals, silver compounds, reducing agents, combustible substances.

Hazardous decomposition products

in the event of fire: See chapter 5.

Further information

fire-promoting substance; strong oxidizing agent.

11. Toxicological information

Acute toxicity

LD₅₀ (oral, rat): 802 mg/kg (chief component).

Further toxicological information

Properties to be expected on the basis of the main component of the preparation:

After inhalation of dust: mucosal irritations, coughing, dyspnoea. Possible damages: pulmonary oedema. Risk of airways sensitization.

After skin contact: Irritations. Risk of skin sensitization.

After eye contact: Irritations.

After swallowing: irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Further data

Further hazardous properties cannot be excluded.

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

12. Ecological information

Ecotoxic effects

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

Biological effects:

Reacts with water to form toxic decomposition products.

Further ecologic data:

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

According to EC Directive 91/155/EEC

Catalogue No.: 114763

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Tests Spectroquant®

N-1K

13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under 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 you will find special information on the respective national conditions as well as contact partners.

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!

15. Regulatory information

Labelling according to EC Directives

Symbol: O Oxidizing
Xn Harmful

R-phrases: 22-42/43 Harmful if swallowed. May cause sensitization by

inhalation and skin contact.

S-phrases: 22-24-37-45 Do not breathe dust. Avoid contact with skin. Wear

suitable gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the

label where possible).

contains: Potassium persulfate

German regulations

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

Storage class VCI 5.1 B

Data sheet of the Chemical Professional Association

M004 Irritant substances/corrosive substances

M050 Dealing with harmful substances

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-1K

Local regulations on chemical accidents:

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.

16. Other information

Text of any R phrases referred to under heading 2:

8 Contact with combustible material may cause fire.

Harmful if swallowed.

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

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

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

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.



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N 25 Tests Spectroquant®

N-2K

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 alkaline solution.

Hazardous ingredients:

Name according to EC Directives:

CAS-No. EC No. EC-Index-No. Classification Content:

Sodium hydroxide

1310-73-2 215-185-5 011-002-00-6 C; R35 32 %

(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 ophtalmologist.

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.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-2K

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.

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.

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. Chemizorb® OH⁻, Art. No. 101596). Forward for disposal. Clean up affected area.

7. Handling and storage

Handling:

No further requirements.

Storage:

Tightly closed. At $+15^{\circ}$ C to $+25^{\circ}$ C.

Requirements for storage rooms and containers:

No aluminium, tin, or zinc containers.

The data apply to the entire pack.

8. Exposure controls/personal protection

Specific control parameter

TRGS 900

Name Sodium hydroxide

Value 2 mg/m³ inhalable fraction

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).

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-2K

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: 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

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).

Other protective equipment:

Suitable protective clothing.

Industrial hygiene:

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

9. Physical and chemical properties

Form: liquid
Colour: colourless
Odour: odourless

pH value $(20 \,^{\circ}\text{C}) > 14$

Viscosity dynamic (20 °C) 19 mPa*s Melting point °C Boiling point not available not applicable Ignition temperature Flash point not applicable **Explosion limits** not applicable lower not applicable upper

Vapour pressure $(20 \,^{\circ}\text{C})$ ~ 8 hPa Density $(20 \,^{\circ}\text{C})$ 1.35 g/cm³

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Catalogue No.: 114763

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Tests Spectroquant®

N-2K

Solubility in

water (20 °C) soluble

10. Stability and reactivity

Conditions to be avoided

no information available

Substances to be avoided

metals, light metals: Formed could be: hydrogen (risk of explosion!).

ammonium compounds: Formed could be: ammonia.

Hazardous decomposition products

no information available

11. Toxicological information

Acute toxicity

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

Further toxicological information

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

After inhalation: burns of mucous membranes.

After skin contact: burns, necrosis.

After eye contact: burns, necrosis, Risk of blindness!

After swallowing: burns in mouth, throat, oesophagus and gastrointestinal tract. Risk of

perforation in the oesophagus and stomach.

Systemic effects: collapse, death.

Further data

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

12. Ecological information

Ecotoxic effects:

Biological effects:

Toxic effect on fish and plankton. Harmful effect due to pH shift. Does not cause biological oxygen deficit. Neutralization possible in waste water treatment plants.

Fish toxicity:

Onchorhynchus mykiss LC_{50} : 45.4 mg/l /96 h (anhydrous substance). L.macrochirus LC_{50} : 99 mg/l /48 h (anhydrous substance).

Daphnia toxicity:

Daphnia magna EC₅₀: 76 mg/l /24 h (anhydrous substance).

Further ecologic data:

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

According to EC Directive 91/155/EEC

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13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under 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 you will find special information on the respective national conditions as well as contact partners.

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!

15. Regulatory information

Labelling according to EC Directives

Symbol: C Corrosive

R-phrases: 35 Causes severe burns.

S-phrases: 26-36/37/39-45 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. 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: Sodium hydroxide

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

M053 General industrial safety measures for dangerous substances.

According to EC Directive 91/155/EEC

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Tests Spectroquant®

N-2K

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

16. Other information

Text of any R phrases referred to under heading 2:

35 Causes severe burns.

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

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

According to EC Directive 91/155/EEC

Date of issue: 23.04.2004 Supersedes edition of 24.11.1999

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

Identification of the product

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l

N 25 Tests Spectroquant®

N-3K

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

Propanolic solution.

Hazardous ingredients:

Name according to EC Directives:

CAS-No. EC No. EC-Index-No. Classification Content:

Xylenol

576-26-1 209-400-1 604-006-00-X T; R24/25 $\geq 0.1 - < 1 \%$

C; R34

N; R51/53

2-Propanol

67-63-0 200-661-7 603-117-00-0 F; R11 $\geq 10 - < 20 \%$

Xi; R36

R67

(Full text of R-Phrases in heading 16)

3. Hazards identification

Flammable. Vapours may cause drowsiness and dizziness.

4. First aid measures

After inhalation: fresh air. Consult doctor if feeling unwell.

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 ophtalmologist if necessary.

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free.

Immediately call in physician. Laxative: Sodium sulfate (1 tablespoon/1/4 l water). Activated

charcoal.

According to EC Directive 91/155/EEC

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5. Fire-fighting measures

Suitable extinguishing media:

powder, foam.

Special risks:

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

Vapours heavier than air. Forms explosive mixtures with air at ambient temperatures.

Special protective equipment for fire fighting:

Do not stay in dangerous zone without self-contained breathing apparatus.

Other information:

Prevent fire-fighting water from entering surface water or groundwater.

6. Accidental release measures

Person-related precautionary measures:

Avoid substance contact. Do not inhale vapours/aerosols. Ensure supply of fresh air in enclosed rooms.

Environmental-protection measures:

Do not allow to enter sewerage system; risk of explosion!

Procedures for cleaning / absorption:

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

7. Handling and storage

Handling:

Notes for prevention of fire and explosion:

Keep away from sources of ignition. Take measures to prevent electrostatic charging.

Notes for safe handling:

Work under hood. Do not inhale substance. Avoid generation of vapours/aerosols.

Storage:

Tightly closed. At $+15^{\circ}$ C to $+25^{\circ}$ C.

The data apply to the entire pack.

8. Exposure controls/personal protection

Specific control parameter

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

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BAT Germany (biol. tolerance value)

Name Propan-2-ol
Parametr Acetone
Values 50 mg/l
Test material blood
test extraction, time b

Parametr Acetone
Values 50 mg/l
Test material urine
test extraction, time b

TRGS 900

Name Propan-2-ol Value 200 ml/m³

 500 mg/m^3

Peak limit 4 exceeding factor: 4-fold in 15 minutes

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. filter ABEK

Eye protection: required

Hand protection: In full contact:

Glove material: butyl rubber
Layer thickness: 0.7 mm
Breakthrough time: > 480 Min.

In splash contact:

Glove material: butyl rubber
Layer thickness: 0.7 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 898 Butoject® (full contact), 898 Butoject® (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).

Industrial hygiene:

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance. Work under hood . Do not inhale substance.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-3K

9. Physical and chemical properties

Form: liquid

Colour: weakly yellowish
Odour: of solvents

pH value (25 °C) 5.0-5.5 undiluted

Melting point not available
Boiling point not available
Ignition temperature not available
Flash point 29 °C
Explosion limits lower not available
upper not available

Vapour pressure (20 °C) 43 hPa (2-Propanol)

Density $(20 \,^{\circ}\text{C})$ $0.97 \,\text{g/cm}^3$

Solubility in

water (20 °C) soluble

10. Stability and reactivity

Conditions to be avoided

Heating.

Substances to be avoided

The generally known reaction partners of water.

Hazardous decomposition products

no information available

Further information

inflammable;

unsuitable working materials: various plastics, rubber; Explosible with air in a vaporous/gaseous state when heated.

11. Toxicological information

Acute toxicity

 LC_{50} (inhalation, rat): 46.5 mg/l /4 h (2-Propanol). LD_{50} (dermal, rabbit): 12800 mg/kg (2-Propanol). LD_{50} (oral, rat): 5045 mg/kg (2-Propanol).

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

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Further toxicological information

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

After inhalation of vapours: drowziness, drowsiness.

After skin contact: Slight irritations. After eye contact: Slight iritations.

After swallowing: After accidental swallowing the substance may pose a risk of aspiration. Passage into the lung (vomiting!) can result in a condition resembling pneumonia (chemical

pneumonitis).

After absorption: headache, dizziness, inebriation, unconsciousness, narcosis.

After uptake of large quantities: respiratory paralysis, coma.

Further data

Further hazardous properties cannot be excluded.

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

12. Ecological information

Applicable to partial component(s): (isopropanol):

Biologic degradation: Readily biodegradable.

Ecotoxic effects: Biological effects:

Fish toxicity: P.promelas LC₅₀: 9640 mg/l /96 h.

Daphnia toxicity: Daphnia magna EC_{50} : 13299 mg/l /48 h. Algeal toxicity: Desmodesmus subspicatus IC_{50} : >1000 mg/l /72 h. Bacterial toxicity: Photobacterium phosphoreum EC_{50} : 22000 mg/l /15 min microtox test.

Maximum permissible toxic concentration:

algae: Sc.quadricauda IC₅: 1800 mg/l /8 d. Bacteria: Ps.putida EC₅: 1050 mg/l /16 h. M.aeruginosa EC₅: 1000 mg/l /8 d. Protozoa: E.sulcatum EC₅: 4930 mg/l /72 h.

Further ecologic data:

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

13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under 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 you will find special information on the respective national conditions as well as contact partners.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-3K

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!

15. Regulatory information

Labelling according to EC Directives

Symbol: ---

R-phrases: 10 Flammable.

S-phrases: ---

German regulations

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

Storage class VCI 3 A

Data sheet of the Chemical Professional Association M017 Solvents

M018 Phenol, cresols and xylenols M050 Dealing with harmful substances

Local regulations on chemical

accidents:

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

16. Other information

Text of any R phrases referred to under heading 2:

Highly flammable.

24/25 Toxic in contact with skin and if swallowed.

Causes burns.Irritating to eyes.

51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic

environment.

Vapours may cause drowsiness and dizziness.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant®

N-3K

Reduced labelling on the container due to small quantity.

Reason for alteration

Chapter 14: transport information.

General update.

Contact for information:

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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

According to EC Directive 91/155/EEC

Date of issue: 23.04.2004 Supersedes edition of 24.11.1999

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

Identification of the product

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l

N 25 Tests Spectroquant®

Blindwertküvette

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: make victim drink plenty of water. 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.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant® Blindwertküvette

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 and neutralizing material (e.g. Chemizorb® H⁺, Art. No.

101595). Forward for disposal. Clean up affected area.

7. Handling and storage

Handling:

No further requirements.

Storage:

Tightly closed. At $+15^{\circ}$ C to $+25^{\circ}$ C.

The data apply to the entire pack.

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: 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).

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).

Industrial hygiene:

Change contaminated clothing. Wash hands after working with substance.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

> Tests Spectroquant® Blindwertküvette

9. Physical and chemical properties

Form: liquid Colour: yellowish Odour: odourless

pH value (25 °C) 5.0

Melting point not available Boiling point not available Ignition temperature not available Flash point not available **Explosion limits** lower not available upper not available

 g/cm^3 Density (20 °C) 1.00

Solubility in

water (25 °C) soluble

10. Stability and reactivity

Conditions to be avoided

Heating.

Substances to be avoided

The generally known reaction partners of water.

Hazardous decomposition products

no information available

11. Toxicological information

Acute toxicity

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

Further toxicological information

Hazardous properties cannot be excluded, but are relatively improbable due to the low concentration of the dissolved substance(s).

Further data

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

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.

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant® Blindwertküvette

13. Disposal considerations

Product:

Chemicals must be disposed of in compliance with the respective national regulations. Under 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 you will find special information on the respective national conditions as well as contact partners.

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!

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

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

According to EC Directive 91/155/EEC

Catalogue No.: 114763

Product name: Nitrogen (total) Cell Test Method: photometric, DMP 10 - 150 mg/l N 25

Tests Spectroquant® Blindwertküvette

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