

# Material Safety Data Sheet

according to Directive 1907/2006/EC (REACH) and 453/2010/EU

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Date of issue: 21.02.2012

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## 1 Identification of the Substance/Mixture and of the Company

### 1.1 Identification/Product Name

REF 985825  
Product name NANOCOLOR BOD5-TT

1 x 6 mL BOD<sub>5</sub>-TT R3  
1 x 3 mL BOD<sub>5</sub>-TT R1  
1 x 3 mL BOD<sub>5</sub>-TT R2  
22 x 1.2 mg BOD<sub>5</sub>-TT R0, lyophilized

### 1.2 Use of the Substance/Mixture

Product for analytical use.  
Exposure Scenario Classification according REACH, RIP 3.2 Codes: SU 0-2, PC 21, PROC 15, AC 0

### 1.3 Manufacturer

MACHEREY-NAGEL GmbH & Co. KG  
Neumann-Neander-Str. 6-8, 52355 Düren, GERMANY  
Tel.: +49 2421 969 0 E-mail: msds@mn-net.com

### 1.4 Emergency Telephone

Outside Germany (DE):  
Call your regional Poisons Information Service or call local Life Saving Service.  
DE: Gemeinsames Giftinformationszentrum (GGIZ) 99089 Erfurt tel. +49 361 730 730

## 2 Hazard Identification

### 2.1 Hazard Symbols of Product

Directive 1999/45/EC  
Symbols



C  
R 35

R

GHS Directive 1272/2008/EC  
GHS Symbols



GHS05



GHS07

Signalword

DANGER

Hazard identification

Hazard classes/categories

H314

Skin Corr. 1A

### 2.2 Hazard Description

#### Possible Hazards from physicochemical Properties

Generally in the case of pH values are less than 2 or higher than 11.5 then it is corrosive. In the case of pH values are less than 5 or higher than 9 then it is irritant.

#### Information pertaining to particular Risks to Human and possible Symptoms

Causes varying degrees of acid burns on the skin, to the eyes and to the mucous membranes and wounds which do not heal quickly depending on the concentration, temperature and the exposure time. Vapours especially which steam from hot liquids and mist can have a severe irritant effect upon the eyes and the respiratory organs.

#### Information pertaining to particular Risks to the Environment

Avoid contact of chemical/mixture to environment.

#### Other Hazards

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## 2.3 Hazard description of the components

### 6 mL BOD<sub>5</sub> -TT R3

Directive 1999/45/EC

Symbols

R 35



C

GHS Directive 1272/2008/EC

GHS Symbols



GHS05

Signalword

DANGER

#### Hazard identification

H314

#### Hazard classes/categories

Skin Corr. 1A

### 3 mL BOD<sub>5</sub> -TT R1

Directive 1999/45/EC

Symbols

-  
do not need labelling as hazardous

GHS Directive 1272/2008/EC

GHS Symbols



GHS07

Signalword

WARNING

#### Hazard identification

H302

H411

#### Hazard classes/categories

Acute Tox. 4 oral

Aquatic Chronic 2

### 3 mL BOD<sub>5</sub> -TT R2

Directive 1999/45/EC

Symbols

R 35



C

GHS Directive 1272/2008/EC

GHS Symbols



GHS05

Signalword

DANGER

#### Hazard identification

H314

#### Hazard classes/categories

Skin Corr. 1B

### 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

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Directive 1999/45/EC

Symbols - do not need labelling as hazardous

GHS Directive 1272/2008/EC

GHS Symbols do not need labelling as hazardous  
Signalword do not need labelling as hazardous

No hazard class

## 3 Composition/Information on Ingredients

### 3.1 Hazardous Components

#### 6 mL BOD<sub>5</sub> -TT R3

Chemical:	<i>sulphuric acid</i>	CAS No.:	7664-93-9
Concentration:	51 - 80 %		
Formula:	H <sub>2</sub> SO <sub>4</sub>		
REACH Reg. No.:	01-2119458838-20		
EC No.:	231-639-5	Indice No.:	016-020-00-8
RTECS:	WS5600000		
TSCA listed:	listed		
acc. 1999/45/EC:	R 35	acc. CLP (GHS):	H314

#### 3 mL BOD<sub>5</sub> -TT R1

Chemical:	<i>manganese chloride</i>	CAS No.:	7773-01-5
Concentration:	25 - 83 %		
Formula:	MnCl <sub>2</sub>		
EC No.:	231-869-6		
RTECS:	OO9625000		
TSCA listed:	listed		
acc. 1999/45/EC:	R 48/20/22-51/53	acc. CLP (GHS):	H302, H411

#### 3 mL BOD<sub>5</sub> -TT R2

Chemical:	<i>sodium hydroxide solution</i>	CAS No.:	1310-73-2
Concentration:	20 - 55 %		
Formula:	NaOH•H <sub>2</sub> O		
Pseudonym:	soda lye		
EC No.:	215-185-5	Indice No.:	011-002-00-6
RTECS:	WB4900000		
TSCA listed:	listed		
acc. 1999/45/EC:	R 35	acc. CLP (GHS):	H314

Chemical:	<i>potassium iodide</i>	CAS No.:	7681-11-0
Concentration:	10 - 100 %		
Formula:	KI		
EC No.:	231-659-4		
RTECS:	TT29750000	MFCD:	MFCD00011405
TSCA listed:	listed		
acc. 1999/45/EC:	-	acc. CLP (GHS):	not necessary

#### 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

Chemical:	<i>magnesium sulphate</i>	CAS No.:	7487-88-9
Concentration:	10 - 100 %		
Formula:	MgSO <sub>4</sub>		
EC No.:	231-298-2		
RTECS:	OM4500000		
TSCA listed:	listed		
acc. 1999/45/EC:	-	acc. CLP (GHS):	not necessary

Chemical:	<i>phosphates (buffer salts)</i>	CAS No.:	-
Concentration:	30 - 75 %		
Formula:	Me <sub>x</sub> H <sub>y</sub> PO <sub>4</sub>		

TSCA listed:	all listed		
acc. 1999/45/EC:	-	acc. CLP (GHS):	not necessary

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## 3.2 Remarks

List of R and H phrases: see chapter 16

## 4 First Aid Measures

### 4.1 General Information

Place insured person out of danger zone to fresh air immediately. Ensure quiet, warmth, and provide resuscitation if necessary. If necessary contact medical advice. Remove contaminated clothing. Show product package, packing insert and this material safety data sheet to the doctor.

#### 4.1.1 After SKIN Contact

Remove contaminated clothing immediately. Rinse the affected skin or mucous membrane thoroughly for min. 15 minutes under running water. (If possible) use soap. Avoid neutralisation. Then apply a loose bandage.

#### 4.1.2 After EYE Contact

After contact with the eyes rinse thoroughly under running water with the eyelid wide open for min. 10 minutes with eye washing bottle, eye douche or running water (protect intact eye). Before (if possible) apply eye drops Proxymetacaine 0.5%, if the opening the eyelid convulsion is painful. Further treatment to be carried out by an eye specialist.

#### 4.1.3 After INHALATION of Vapours

After inhalation of foam or vapour fresh air should be inhaled. Keep airways free. If vomiting and if insensible place patient in recovery position and keep airways free.

#### 4.1.4 After ORAL Intake

After oral intake lots of water with activated charcoal supplement should be drunk after it has been ingested. Do not induce vomiting under any circumstances. Do not make any efforts to neutralise it. Contact medical advice for possible consequences.

### 4.2 Further Medical Treatment/Attention

**CORROSIVE DAMAGE:** After SKIN CONTACT rinse with water for a long time. Efforts to neutralise the substance can frequently make matters worse. Apply glucocorticosteroides following inflammatory reactions. After EYE CONTACT rinse immediately with plenty of water for a long time. Eyelid convulsion measures. Name the corrosive chemical. Further treatment must be carried out by an eye specialist. After INTAKE administer aluminium oxide drug suspensions. Administer a prophylaxis to counter pulmonary oedema following the INGESTION of corrosive aerosols. In the event of RESPIRATORY DISTRESS ensure that the patient inhales oxygen.

## 5 Fire-fighting Measures

### 5.1 Suitable Extinguishing Media

Fire extinguishers appropriate to the fire classification, and, if applicable, a fire blanket must be available in a prominent location in the work area. All extinguishers like FOAM, WATER SPRAY, DRY POWDER, CARBON DIOXIDE can be used.

### 5.2 Hazards, Combustion Products/Gases

Formation of hazardous and caustic vapour-air mixtures possible.

Danger for environment **only in the event of a large-scale leakage** or formation of hazardous substances.

### 5.3 Special Protective Equipment required

If necessary protective breathing apparatus which is independent of the ambient air (isolated equipment), and sealed protective clothing is necessary in the event of a large-scale formation of toxic substances.

### 5.4 Additional Information

Product package burns like paper or plastic. Spray any vapours released with water. Retent fire water. Use only acid-resistant safety equipment.

## 6 Accidental Release Measures

### 6.1 Personal Precautions

Do not breathe vapours. Wear suitable protective gloves (see 8.2.2). Wear eye protection, respectively face protection. Regular staff training is necessary, indicating hazards and precautions on the basis of operating instructions. Restrictions on activity must be observed.

### 6.2 Methods of Cleaning-up

Bind any escaping liquid with universal binder. And dispose in accordance to local regulations for the disposal of hazardous chemicals. Clean any contaminated equipment and floors with plenty of water. Collect small amounts of leaked liquid and flush with water into drains.

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## 7 Handling and Storage

### 7.1 Handling

In accordance with the testing instructions, that comes with the product. Use a safety bottle when shaking test tubes.

### 7.2 Storage

The original product package of MACHEREY-NAGEL allows a safe storage.

Storage class (German chemical industry): see chapter 12.1

#### 7.2.1 Requirements for Stock Rooms and Containers

Keep original product packages tightly closed during handling and storage. Use inbreakable container for transport of glass bottles.

## 8 Exposure Controls/Personal Protection

### 8.1 Exposure Limit Values

#### 6 mL BOD<sub>5</sub> -TT R3

Chemical: *sulphuric acid*

CAS No.: 7664-93-9

TRGS 900 (DE): 0.1 E mg/m<sup>3</sup>

TRGS 901 (DE): 104

SUVA(CH) MAK value: 0,1 e mg/m<sup>3</sup>

TRGS 905 (DE): R<sub>F</sub> C

#### 3 mL BOD<sub>5</sub> -TT R1

Chemical: *manganese chloride*

CAS No.: 7773-01-5

TRGS 900 (DE): 0.5 E mg/m<sup>3</sup>

SUVA(CH) MAK value: 0,5 e mg/m<sup>3</sup>

#### 3 mL BOD<sub>5</sub> -TT R2

Chemical: *sodium hydroxide solution*

CAS No.: 1310-73-2

TRGS 900 (DE): (2 E) mg/m<sup>3</sup>

Short-term exposure factor: =1=

SUVA(CH) MAK value: 2 e mg/m<sup>3</sup>

Chemical: *potassium iodide*

CAS No.: 7681-11-0

#### 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

Chemical: *magnesium sulphate*

CAS No.: 7487-88-9

Chemical: *phosphates (buffer salts)*

CAS No.: -

### 8.2 Exposure Controls

Good ventilation and extraction system in the room, floor resistant to chemicals with floor drainage and washing facilities. The highest level of cleanliness must be maintained at the workplace.

#### 8.2.1 Respiratory Protection

Only if additional recommendations in test instruction or packing insert.

#### 8.2.2 Hand Protection

Yes, gloves according EN 374, consist of natural latex, butylrubber, viton or nitril (f.ex. Neopren® or Camatril from KCI). Use for short times all chemical resistant gloves (limited).

#### 8.2.3 Eye Protection

Yes, safety glasses according EN 166 or face protection.

#### 8.2.4 Skin Protection

Recommended, to avoid clothing damage, to avoid contamination with these hazards.

#### 8.2.5 Personal Hygiene

Eating, drinking, smoking, taking snuff and storage of food in work areas and at outdoor workplaces is prohibited. Avoid contact with the skin, eyes and clothing. Rinse any clothing on which the substance has been spilled, and soak it in water. Wash hands thoroughly with soap and water when stopping work and before eating, and then apply protective skin cream.

## 9 Physical and Chemical Properties

### 9.1 General Information

#### 6 mL BOD<sub>5</sub> -TT R3

Color: colourless

Odor: odorless

Appearance: liquid

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## 3 mL BOD<sub>5</sub> -TT R1

Color: rose

Odor: odorless

Appearance: liquid

## 3 mL BOD<sub>5</sub> -TT R2

Color: colourless

Odor: odorless

Appearance: liquid

## 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

Color: colourless

Odor: odorless

Appearance: solid (lyoph.)

## 9.2 Important Health, Safety and Environmental Information

### 9.2.1 Safety relevant Basis Data

#### 6 mL BOD<sub>5</sub> -TT R3

pH:

0-1

specific gravity:

1,77 g/cm<sup>3</sup>

solubility in water:

0-100 %

#### 3 mL BOD<sub>5</sub> -TT R1

pH:

5-7

specific gravity:

no data available

solubility in water:

0-100 %

#### 3 mL BOD<sub>5</sub> -TT R2

pH:

13-14

specific gravity:

no data available

solubility in water:

0-100 %

#### 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

pH:

6-8

specific gravity:

no data available

solubility in water:

0-100 %

### 9.2.2 Relevant Properties of Substance Group

### 9.3 Additional Information

## 10 Stability and Reactivity

### 10.1 Conditions to avoid

If on label. When indicated in packing insert.

### 10.2 Materials to avoid

Avoid contact with strong acids or alkalines.

### 10.3 Hazardous Decomposition Products

In the original package all parts/all reagents are safety and separated stored. Decompositions are not observed during the expiration period under recommended conditions.

## 11 Toxicological Information

Following information is valid for pure chemicals. Quantitative data on the toxicity of this product are not available.

### 6 mL BOD<sub>5</sub> -TT R3

Chemical: *sulphuric acid*

CAS No.: 7664-93-9

LD50<sub>orl</sub> rat : 2140 mg/kg

LC50<sub>ihl</sub> mouse : 320<sub>4h</sub> mg/L

LC50<sub>ihl</sub> rat : 510 mg/m<sup>3</sup>

### 3 mL BOD<sub>5</sub> -TT R1

Chemical: *manganese chloride*

CAS No.: 7773-01-5

LD50<sub>orl</sub> rat : 250 mg/kg

### 3 mL BOD<sub>5</sub> -TT R2

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Chemical: *sodium hydroxide solution*  
LD50<sub>orl rat</sub>: 500<sub>100%</sub> mg/kg

CAS No.: 1310-73-2

Chemical: *potassium iodide*  
LD50<sub>orl rat</sub>: 2779 mg/kg

CAS No.: 7681-11-0

## 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

Chemical: *magnesium sulphate*  
LD50<sub>orl rat</sub>: >2000 g/cm<sup>3</sup>

CAS No.: 7487-88-9

Chemical: *phosphates (buffer salts)*  
LD50<sub>orl rat</sub>: > 2000 mg/kg

CAS No.: -

## 12 Ecological Information

### 12.1 Ecotoxicity

Following information is valid for pure chemicals.

#### 6 mL BOD<sub>5</sub> -TT R3

Chemical: *sulphuric acid*  
LC50<sub>fish/96h</sub>: 16-29 mg/L  
EC50<sub>daphnia/48h</sub>: 29<sub>24h</sub> mg/L  
WGK (DE): 1 WGK No.: 0182  
storage class (VCI): 8 B

CAS No.: 7664-93-9

#### 3 mL BOD<sub>5</sub> -TT R1

Chemical: *manganese chloride*  
WGK (DE): 1 WGK No.: 0494  
storage class (VCI): 12

CAS No.: 7773-01-5

#### 3 mL BOD<sub>5</sub> -TT R2

Chemical: *sodium hydroxide solution*  
WGK (DE): 1 WGK No.: 0142  
storage class (VCI): 8 B

CAS No.: 1310-73-2

Chemical: *potassium iodide*  
WGK (DE): 1  
storage class (VCI): 12-13

CAS No.: 7681-11-0

#### 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

Chemical: *magnesium sulphate*  
WGK (DE): 1  
storage class (VCI): 12-13

CAS No.: 7487-88-9

Chemical: *phosphates (buffer salts)*  
WGK (DE): 1  
storage class (VCI): 12

CAS No.: -

## 13 Disposal Considerations

Please observe local regulations for collection and disposal of hazardous waste and contact waste disposal company, where you will obtain information on laboratory waste disposal (waste code number 16 05 06).

Normally it is possible to empty small amounts (diluted!) into drains.

Dispose of contents/container to regulated waste treatment.

## 14 Transport Information

Proper shipping name: Chemical Kit

UN No.: 3316 Packing group: II

Class: 9

Road transport

Classification code: M11 Tunnel restriction code: E

Limited Quantity: LQ 0 (acc. ADR 3.3.1/251: as LQ until max. 10 kg, see LQ in alternative transport name)

Air transport

PAX: 960 max. weight PAX: 10 KG

CAO: 960 max. weight CAO: 10 KG

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## Maritime transport

EmS: F-A, S-P Storage category: A

**Alternative Transport Labelling** follows: UN No.: (see below) Class 8 II, **excepted quantities** ( $\leq 30 \text{ mL} / \Sigma \leq 500 \text{ mL}$ ) = ADR/ IATA E2 or

Proper shipping name: **Corrosive liquid, acidic, inorganic, n.o.s. (sulphuric acid solution)**

UN No.: **3264** Packing group: **II**

Class: **8**

## Road transport

Classification code: C1

Limited Quantity: LQ 22

Excepted Quantity: E 2

Tunnel restriction code: E

## Air transport

PAX: 851

max. weight PAX: 1 L

CAO: 855

max. weight CAO: 30 L

## Maritime transport

EmS: F-A, S-B

Storage category: B

Maritime pollutant (5.2.1.6): P\* (only if P > 5 L/kg, or PP > 0.5 L/kg per inner package)

## 15 Regulatory Information

### 15.1 International Regulations

According 1999/45/EC small amounts of harmful and highly flammable preparations/mixtures have partly/completely exemption from labelling (no symbols F, O, Xn, Xi, N and no R and S phrases are necessary) until **25-125 mL/g**.

According **GHS** inner packages must be only labelled with symbol(s) and product identifier.

Harmful chemicals/mixtures with signalword: **WARNING** and highly flammable chemicals/mixtures must not be labelled with H and P phrases until **125 mL** or **125 g**.

### 6 mL BOD<sub>5</sub> -TT R3

Directive 1999/45/EC

Symbols:



C

R 35

Causes severe burns.

S 26

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

GHS Directive 1272/2008/EC

GHS Symbols:



GHS05

Signalword: DANGER

H314

Causes severe skin burns and eye damage.

P260D, P280sh, P301+330+331, P303+361+353, P304+340, P305+351+338

Do not breathe vapours. Wear protective gloves/eye protection. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

### 3 mL BOD<sub>5</sub> -TT R1



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Directive 1999/45/EC

Symbols:

-  
-

GHS Directive 1272/2008/EC

GHS Symbols:



GHS07

Signalword: WARNING

## 3 mL BOD<sub>5</sub> -TT R2

Directive 1999/45/EC

Symbols:



C

R 35

Causes severe burns.

S 26-37/39

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

GHS Directive 1272/2008/EC

GHS Symbols:



GHS05

Signalword: DANGER

H314

Causes severe skin burns and eye damage.

P260D, P280sh, P301+330+331, P303+361+353, P304+340, P305+351+338

Do not breathe vapours. Wear protective gloves/eye protection. IF SWALLOWED: rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

## 1.2 mg BOD<sub>5</sub> -TT R0, lyophilized

Directive 1999/45/EC

Symbols:

-  
-

GHS Directive 1272/2008/EC

GHS Symbols:

do not need labelling as hazardous

Signalword: -

## 15.2 National Regulations

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German act governing protection from hazardous substances (Chemicals Act / Chemikaliengesetz- ChemG), revised on May 2008  
German order governing protection from hazardous substances (Ordinance on Hazardous Substances / Gefahrstoffverordnung - GefStoffV), revised on November 2010, according to Directive 98/24/EC  
TRGS 200, German engineering rules governing the classification and labelling of hazardous substances, preparations and products, updated December 2009  
Announcement BekGS 220 (DE), Safety Data Sheet, September 2007 updated May 2009

## 16 Other Information

### 16.1 List of R and H phrases

#### 16.1.1 List of relevant R phrases

R35 Causes severe burns.  
R48/20/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

#### 16.1.2 List of relevant H phrases

H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.  
H411 Toxic to aquatic life with long lasting effects.

### 16.2 Training Advice

Multiple safety training of staffs about danger and protection by using hazards in working area. Additionally training and introduction of staffs for using these products.

### 16.3 Recommended Restriction on Use

Only for professional user.  
Look about employee restrictions for young people (f. ex. DE § 22 JArbSchG)!  
Look about employee restrictions for pregnant women and nursing women (f.ex. DE §§ 4 und 5 MuSchRiV)!  
An individual package of this product or test kit has a moderate hazardous potential.

### 16.4 Further Information

MACHEREY-NAGEL GmbH & Co. KG provides the information contained herein in good faith being up-to-date of own realizations at revision time. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgement in determining its appropriateness for a particular purpose.  
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### 16.5 Sources of Key Data

Regulation 453/2010/EU REACH - REQUIREMENTS FOR THE COMPILATION OF SAFETY DATA SHEETS  
TRGS 900, German engineering rules governing limits in air at work, updated May 2010  
SUVA .CH, Limits in air at work 2009, revised on 01.2009  
KÜHN, BIRETT Merkblätter Gefährliche Arbeitsstoffe (Data Sheets of Hazardous Substances)

You find our current versions of MSDS in Internet:  
<http://www.mn-net.com/MSDS>