

19.03.2022

### Kit Components

Product code	Description
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<b>CAY441-VxxAAE</b>	<b>CA71COD-B Reagent Set</b>
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Components:

71251118	Reagent COD1 (A+B)
71251187	Reagent COD2 (B)
71251190A	Reagent COD3 (A+B)

**SECTION 1: Identification of the substance or mixture and of the supplier****Product identifier**Trade name: **Reagent COD1 (A+B)**

Article number: 71251118

Recommended use of the chemical and restrictions on use *No further relevant information available.*Application of the substance / the mixture *Laboratory chemicals***Supplier's details****Manufacturer/Supplier:**

Endress+Hauser  
Conducta GmbH+Co. KG  
Dieselstraße 24  
D-70839 Gerlingen

**Further information obtainable from:**

Phone: +49 (0)7156 209-10117  
E-Mail: [MSDS.PCC@endress.com](mailto:MSDS.PCC@endress.com)

Emergency phone number +27 (0)861 555 777

**SECTION 2: Hazard identification****Classification of the substance or mixture***corrosion**Skin Corr. 1A H314 Causes severe skin burns and eye damage.**Eye Dam. 1 H318 Causes serious eye damage.***GHS label elements****GHS label elements***The product is classified and labelled according to the Globally Harmonised System (GHS).***Hazard pictograms**


GHS05

**Signal word** *Danger***Hazard-determining components of labelling:***sulphuric acid***Hazard statements***Causes severe skin burns and eye damage.***Precautionary statements***IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].**IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**Immediately call a POISON CENTER/doctor.**Specific treatment (see on this label).**Store locked up.**Dispose of contents/container in accordance with local/regional/national/international regulations.***Additional information:***Product contains: Restricted explosives precursors. Making available, introduction, possession and use according to Regulation (EU) 2019/1148, Article 5 (1) and (3).***Other hazards***The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.*

**Trade name: Reagent COD1 (A+B)**

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**Results of PBT and vPvB assessment**PBT: *Not applicable.*vPvB: *Not applicable.***SECTION 3: Composition or information on ingredients****Mixtures****Description:** *Mixture of substances listed below with nonhazardous additions.***Dangerous components:**

CAS: 7664-93-9 EINECS: 231-639-5	<p>sulphuric acid</p> <p> Skin Corr. 1A, H314</p> <p>Specific concentration limits: Skin Corr. 1A; H314: C ≥ 15 % Skin Irrit. 2; H315: 5 % ≤ C &lt; 15 % Eye Irrit. 2; H319: 5 % ≤ C &lt; 15 %</p>	60-80%
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**Additional information:** *For the wording of the listed hazard phrases refer to section 16.***SECTION 4: First-aid measures****Description of necessary first-aid measures****General information:** *Immediately remove any clothing soiled by the product.***After inhalation:** *In case of unconsciousness place patient stably in side position for transportation.***After skin contact:***Immediately wash with water and soap and rinse thoroughly.**Immediately rinse with water.***After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.***After swallowing:** *Drink plenty of water and provide fresh air. Call for a doctor immediately.***Most important symptoms or effects, acute and delayed** *No further relevant information available.***Indication of immediate medical attention and special treatment needed, if necessary***No further relevant information available.***SECTION 5: Fire-fighting measures****Suitable extinguishing media****Suitable extinguishing agents:***CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.***For safety reasons unsuitable extinguishing agents:** *no further information***Specific hazards arising from the chemical***During heating or in case of fire poisonous gases are produced.***Special protective actions for fire fighters** *No further relevant information available.***Protective equipment:** *Mount respiratory protective device.***SECTION 6: Accidental release measures****Personal precautions, protective equipment and emergency procedures***Mount respiratory protective device.**Wear protective equipment. Keep unprotected persons away.**Wear protective clothing.***Environmental precautions:***Dilute with plenty of water.**Do not allow to enter sewers/ surface or ground water.***Methods and material for containment and cleaning up:***Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).**Use neutralising agent.**Dispose contaminated material as waste according to item 13.*

(Contd. on page 3)

**Trade name: Reagent COD1 (A+B)**

(Contd. of page 2)

*Ensure adequate ventilation.***Reference to other sections***See Section 7 for information on safe handling.**See Section 8 for information on personal protection equipment.**See Section 13 for disposal information.***SECTION 7: Handling and storage****Precautions for safe handling***Do not dry clean dust covered objects and floors. Wash thoroughly with plenty of water.**Ensure good ventilation/exhaustion at the workplace.**Prevent formation of aerosols.***Information about fire - and explosion protection:** *Keep respiratory protective device available.***Conditions for safe storage, including any incompatibilities****Storage:****Requirements to be met by storerooms and receptacles:** *No special requirements.***Information about storage in one common storage facility:** *Not required.***Further information about storage conditions:** *Keep container tightly sealed.***Storage class:** 8 B**Specific end use(s)** *No further relevant information available.***\* SECTION 8: Exposure controls or personal protection****Control parameters****Ingredients with limit values that require monitoring at the workplace:****CAS: 7664-93-9 sulphuric acid**

OEL	Long-term value: 0.4* mg/m <sup>3</sup>
	*T, CARC

**DNELs****CAS: 7664-93-9 sulphuric acid**

Inhalative	DNEL short-term	0.1 mg/m <sup>3</sup> (worker) (local effects)
	DNEL long-term	0.05 mg/m <sup>3</sup> (worker) (local effects)

**PNECs****CAS: 7664-93-9 sulphuric acid**

PNEC	8.8 mg/L (Wastewater treatment plant)
	0.25 mg/L (sea water)
PNEC	2.5 µg/L (fresh water)
PNEC	2 µg/kg (marine sediment)
	2 µg/kg (freshwater sediment)

**Additional information:** *The lists valid during the making were used as basis.***Exposure controls****Appropriate engineering controls** *No further data; see item 7.***Individual protection measures, such as personal protective equipment (PPE)****General protective and hygienic measures:***Keep away from foodstuffs, beverages and feed.**Immediately remove all soiled and contaminated clothing**Wash hands before breaks and at the end of work.**Avoid contact with the eyes.**Avoid contact with the eyes and skin.***Respiratory protection:***In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.*

(Contd. on page 4)

**Trade name: Reagent COD1 (A+B)**

(Contd. of page 3)

**Hand protection***Protective gloves*

To avoid skin problems reduce the wearing of gloves to the required minimum.  
Only use chemical-protective gloves with CE-labelling of category III.  
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

**Material of gloves***Nitrile rubber, NBR**Chloroprene rubber, CR*

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Penetration time of glove material**

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

**Eye or face protection***Tightly sealed goggles*

**Body protection:** *Protective work clothing*

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****General Information****Physical state***Fluid***Colour:***Colourless***Odour:***Odourless***Odour threshold:***Not determined.***Melting point/freezing point:***Undetermined.***نقطة الغليان أو نقطة الغليان الأولية ونطاق الغليان***Undetermined.***Flammability***Not applicable.***Upper or lower flammability or explosive limits****Lower:***Not determined.***Upper:***Not determined.***Flash point:***Not applicable.***Decomposition temperature:***Not determined.***pH at 20 °C***<1***Viscosity:****Viscosity***Not determined.***Dynamic:***Not determined.***Solubility****water:***Fully miscible.***Partition coefficient: n-octanol or water***Not determined.***Vapour pressure at 20 °C:***23 hPa***Vapour density + Relative density****Density at 20 °C:***1.521 g/cm<sup>3</sup>***Relative density***Not determined.***Vapour density***Not determined.*

(Contd. on page 5)

## Trade name: Reagent COD1 (A+B)

(Contd. of page 4)

**Other information****Appearance:****Form:** Fluid**Important information on protection of health and environment, and on safety.****Auto-ignition temperature:**

Product is not selfigniting.

**Explosive properties:**Product does not present an explosion hazard.  
Not determined.**Solvent content:****Water:** 25.0 %**Solids content:** 0.0 %**Change in condition****Evaporation rate** Not determined.**Information with regard to physical hazard classes****Explosives** Void**Flammable gases** Void**Aerosols** Void**Oxidising gases** Void**Gases under pressure** Void**Flammable liquids** Void**Flammable solids** Void**Self-reactive substances and mixtures** Void**Pyrophoric liquids** Void**Pyrophoric solids** Void**Self-heating substances and mixtures** Void**Substances and mixtures, which emit flammable gases in contact with water** Void**Oxidising liquids** Void**Oxidising solids** Void**Organic peroxides** Void**Corrosive to metals** Void**Desensitised explosives** Void**SECTION 10: Stability and reactivity****Reactivity** No further relevant information available.**Chemical stability****Thermal decomposition / conditions to be avoided:**

No decomposition if used according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known.**Conditions to avoid** No further relevant information available.**Incompatible materials:** No further relevant information available.**Hazardous decomposition products:** No dangerous decomposition products known.**SECTION 11: Toxicological information****Information on hazard classes as defined in Regulation (EC) No 1272/2008****Skin corrosion or irritation** Causes severe skin burns and eye damage.**Serious eye damage or irritation** Causes serious eye damage.**Information on other hazards****endocrine disrupting potential**

None of the ingredients is listed.

(Contd. on page 6)

Trade name: Reagent COD1 (A+B)

(Contd. of page 5)

**SECTION 12: Ecological information****Toxicity****Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Endocrine disrupting properties**

The product does not contain substances with endocrine disrupting properties.

**Other adverse effects****Additional ecological information:****General notes:**

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

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

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

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

**SECTION 13: Disposal considerations****Waste treatment methods****Recommendation**

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

**Uncleaned packaging:****Recommendation:** Disposal must be made according to official regulations.**Recommended cleansing agents:** Water, if necessary together with cleansing agents.**SECTION 14: Transport information****UN number**

IMDG, IATA

UN1830

**UN proper shipping name**

ADR

UN1830 SULPHURIC ACID

IMDG

SULPHURIC ACID

IATA

Sulphuric acid

**Transport hazard class(es)**

ADR



Class

8 (C1) Corrosive substances.

Label

8

**IMDG, IATA**

Class

8 Corrosive substances.

Label

8

(Contd. on page 7)

## Trade name: Reagent COD1 (A+B)

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<b>Packing group</b>	II
<b>ADR, IMDG, IATA</b>	II
<b>Environmental hazards:</b>	Not applicable.
<b>Special precautions for user</b>	Warning: Corrosive substances.
<b>Hazard identification number (Kemler code):</b>	80
<b>EMS Number:</b>	F-A,S-B
<b>Segregation groups</b>	Strong acids
<b>Stowage Category</b>	C
<b>Stowage Code</b>	SW15 For metal drums, stowage category B.
<b>Segregation Code</b>	SG36 Stow "separated from" SGG18-alkalis. SG49 Stow "separated from" SGG6-cyanides
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	Not applicable.

## Transport/Additional information:

<b>ADR</b>	
<b>Limited quantities (LQ)</b>	1L
<b>Transport category</b>	2
<b>Tunnel restriction code</b>	E

## IMDG

<b>Limited quantities (LQ)</b>	1L
<b>Excepted quantities (EQ)</b>	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
<b>UN "Model Regulation":</b>	UN 1830 SULPHURIC ACID, 8, II

## \* SECTION 15: Regulatory information

## Safety, health and environmental regulations specific for the product in question

## GHS label elements

The product is classified and labelled according to the Globally Harmonised System (GHS).

## Hazard pictograms



GHS05

Signal word *Danger*

## Hazard-determining components of labelling:

*sulphuric acid*

## Hazard statements

*Causes severe skin burns and eye damage.*

## Precautionary statements

*IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].*

*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*

*Immediately call a POISON CENTER/doctor.*

*Specific treatment (see on this label).*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

## Directive 2012/18/EU

**Named dangerous substances - ANNEX I** *None of the ingredients is listed.*

## National regulations:

**Waterhazard class:** *Water hazard class 1 (Self-assessment): slightly hazardous for water.*

(Contd. on page 8)



**Trade name: Reagent COD1 (A+B)**

(Contd. of page 7)

**Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.***SECTION 16: Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

**Department issuing SDS:** PCC-TWR**Contact:** *MSDS.pcc@endress.com***Abbreviations and acronyms:**

*RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)*

*IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)*

*ICAO: International Civil Aviation Organisation*

*ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)*

*ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*IATA: International Air Transport Association*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*ELINCS: European List of Notified Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*DNEL: Derived No-Effect Level (REACH)*

*PNEC: Predicted No-Effect Concentration (REACH)*

*PBT: Persistent, Bioaccumulative and Toxic*

*vPvB: very Persistent and very Bioaccumulative*

*Skin Corr. 1A: Skin corrosion/irritation – Category 1A*

*Eye Dam. 1: Serious eye damage/eye irritation – Category 1*

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

**SECTION 1: Identification of the substance or mixture and of the supplier**

**Product identifier**

Trade name: **Reagent COD2 (B)**

Article number: 71251187

Recommended use of the chemical and restrictions on use *No further relevant information available.*

Application of the substance / the mixture *Laboratory chemicals*

**Supplier's details**

**Manufacturer/Supplier:**

Endress+Hauser  
 Conducta GmbH+Co. KG  
 Dieselstraße 24  
 D-70839 Gerlingen

**Further information obtainable from:**

Phone: +49 (0)7156 209-10117  
 E-Mail: MSDS.PCC@endress.com

Emergency phone number +27 (0)861 555 777

**SECTION 2: Hazard identification**

**Classification of the substance or mixture**



*skull and crossbones*

Acute Tox. 3      H331      *Toxic if inhaled.*



*health hazard*

Resp. Sens. 1      H334      *May cause allergy or asthma symptoms or breathing difficulties if inhaled.*  
 Muta. 1B          H340      *May cause genetic defects.*  
 Carc. 1B          H350      *May cause cancer.*  
 Repr. 1B          H360FD *May damage fertility. May damage the unborn child.*  
 STOT RE 2        H373      *May cause damage to the respiratory system through prolonged or repeated exposure.*



*corrosion*

Skin Corr. 1A      H314      *Causes severe skin burns and eye damage.*  
 Eye Dam. 1        H318      *Causes serious eye damage.*



Skin Sens. 1        H317      *May cause an allergic skin reaction.*  
 Aquatic Chronic 3 H412      *Harmful to aquatic life with long lasting effects.*

**GHS label elements**

**GHS label elements**

*The product is classified and labelled according to the Globally Harmonised System (GHS).*

(Contd. on page 2)

Trade name: Reagent COD2 (B)

(Contd. of page 1)

Hazard pictograms



GHS05 GHS06 GHS08

Signal word *Danger*

Hazard-determining components of labelling:

*sulphuric acid*  
*Potassium dichromate*

Hazard statements

*Toxic if inhaled.*  
*Causes severe skin burns and eye damage.*  
*May cause allergy or asthma symptoms or breathing difficulties if inhaled.*  
*May cause an allergic skin reaction.*  
*May cause genetic defects.*  
*May cause cancer.*  
*May damage fertility. May damage the unborn child.*  
*May cause damage to the respiratory system through prolonged or repeated exposure.*  
*Harmful to aquatic life with long lasting effects.*

Precautionary statements

*IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].*  
*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*  
*Immediately call a POISON CENTER/doctor.*  
*Specific treatment (see on this label).*  
*Take off contaminated clothing and wash it before reuse.*  
*Store locked up.*  
*Dispose of contents/container in accordance with local/regional/national/international regulations.*

Additional information:

*Product contains: Restricted explosives precursors. Making available, introduction, possession and use according to Regulation (EU) 2019/1148, Article 5 (1) and (3).*  
*Restricted to professional users.*

Other hazards

*The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.*

Results of PBT and vPvB assessment

**PBT:** *Not applicable.*

**vPvB:** *Not applicable.*

**SECTION 3: Composition or information on ingredients**

Mixtures

**Description:** *Mixture of substances listed below with nonhazardous additions.*

Dangerous components:		
CAS: 7664-93-9 EINECS: 231-639-5	<i>sulphuric acid</i> Skin Corr. 1A, H314 Specific concentration limits: Skin Corr. 1A; H314: C ≥ 15 % Skin Irrit. 2; H315: 5 % ≤ C < 15 % Eye Irrit. 2; H319: 5 % ≤ C < 15 %	10-20%
CAS: 7778-50-9 EINECS: 231-906-6	<i>Potassium dichromate</i> Ox. Sol. 2, H272; Acute Tox. 3, H301; Acute Tox. 2, H330; Resp. Sens. 1, H334; Muta. 1B, H340; Carc. 1B, H350; Repr. 1B, H360FD; STOT RE 1, H372; Skin Corr. 1B, H314; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Acute Tox. 4, H312; Skin Sens. 1, H317 Specific concentration limit: STOT SE 3; H335: C ≥ 5 %	1-2.5%

(Contd. on page 3)

**Trade name: Reagent COD2 (B)**

(Contd. of page 2)

CAS: 10294-26-5	silver sulfate	≤1%
EINECS: 233-653-7	Eye Dam. 1, H318; Aquatic Acute 1, H400; Aquatic Chronic 1, H410	

**SVHC**

CAS: 7778-50-9 | Potassium dichromate

**Additional information:** For the wording of the listed hazard phrases refer to section 16.**SECTION 4: First-aid measures****Description of necessary first-aid measures****General information:***Immediately remove any clothing soiled by the product.**Remove breathing equipment only after contaminated clothing have been completely removed.**In case of irregular breathing or respiratory arrest provide artificial respiration.***After inhalation:***Supply fresh air or oxygen; call for doctor.**In case of unconsciousness place patient stably in side position for transportation.***After skin contact:***Immediately wash with water and soap and rinse thoroughly.**Immediately rinse with water.***After eye contact:** *Rinse opened eye for several minutes under running water. Then consult a doctor.***After swallowing:** *Drink plenty of water and provide fresh air. Call for a doctor immediately.***Most important symptoms or effects, acute and delayed** *No further relevant information available.***Indication of immediate medical attention and special treatment needed, if necessary***No further relevant information available.***SECTION 5: Fire-fighting measures****Suitable extinguishing media****Suitable extinguishing agents:***CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.***For safety reasons unsuitable extinguishing agents:** *no further information***Specific hazards arising from the chemical***During heating or in case of fire poisonous gases are produced.***Special protective actions for fire fighters** *No further relevant information available.***Protective equipment:** *Mount respiratory protective device.***SECTION 6: Accidental release measures****Personal precautions, protective equipment and emergency procedures***Mount respiratory protective device.**Wear protective equipment. Keep unprotected persons away.**Wear protective clothing.***Environmental precautions:***Do not allow product to reach sewage system or any water course.**Inform respective authorities in case of seepage into water course or sewage system.**Dilute with plenty of water.**Do not allow to enter sewers/ surface or ground water.***Methods and material for containment and cleaning up:***Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).**Use neutralising agent.**Dispose contaminated material as waste according to item 13.**Ensure adequate ventilation.***Reference to other sections***See Section 7 for information on safe handling.*

(Contd. on page 4)

**Trade name: Reagent COD2 (B)**

(Contd. of page 3)

See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

**SECTION 7: Handling and storage****Precautions for safe handling**

Do not dry clean dust covered objects and floors. Wash thoroughly with plenty of water.  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle receptacle with care.  
Prevent formation of aerosols.

**Information about fire - and explosion protection:** Keep respiratory protective device available.

**Conditions for safe storage, including any incompatibilities****Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements.

**Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** Keep container tightly sealed.

**Storage class:** 6.1 B

**Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls or personal protection****Control parameters****Ingredients with limit values that require monitoring at the workplace:****CAS: 7664-93-9 sulphuric acid**

OEL Long-term value: 0.4\* mg/m<sup>3</sup>  
\*T, CARC

**CAS: 7778-50-9 Potassium dichromate**

OEL Long-term value: 0.0004\* mg/m<sup>3</sup>  
as Cr \*inhalable; CARC RSEN SKIN OEL-ML

**DNELs****CAS: 7664-93-9 sulphuric acid**

Inhalative	DNEL short-term	0.1 mg/m <sup>3</sup> (worker) (local effects)
	DNEL long-term	0.05 mg/m <sup>3</sup> (worker) (local effects)

**PNECs****CAS: 7664-93-9 sulphuric acid**

PNEC	8.8 mg/L (Wastewater treatment plant)
	0.25 mg/L (sea water)
PNEC	2.5 µg/L (fresh water)
PNEC	2 µg/kg (marine sediment)
	2 µg/kg (freshwater sediment)

**CAS: 7778-50-9 Potassium dichromate**

PNEC	0.21 mg/L (Wastewater treatment plant)
	0 mg/L (fresh water)
PNEC	0.15 mg/kg (marine sediment)
	0.15 mg/kg (freshwater sediment)
	0.035 mg/kg (soil)

**Additional information:** The lists valid during the making were used as basis.

**Exposure controls**

**Appropriate engineering controls** No further data; see item 7.

(Contd. on page 5)

**Trade name: Reagent COD2 (B)**

(Contd. of page 4)

**Individual protection measures, such as personal protective equipment (PPE)****General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.  
 Immediately remove all soiled and contaminated clothing  
 Wash hands before breaks and at the end of work.  
 Store protective clothing separately.  
 Avoid contact with the eyes.  
 Avoid contact with the eyes and skin.

**Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

**Hand protection**

Protective gloves

To avoid skin problems reduce the wearing of gloves to the required minimum.  
 Only use chemical-protective gloves with CE-labelling of category III.  
 The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

**Material of gloves**

Nitrile rubber, NBR

Natural rubber, NR

Chloroprene rubber, CR

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Penetration time of glove material**

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

**Eye or face protection**

Tightly sealed goggles

**Body protection:** Protective work clothing

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****General Information****Physical state**

Fluid

**Colour:**

Light orange colour

**Odour:**

Odourless

**Odour threshold:**

Not determined.

**Melting point/freezing point:**

Undetermined.

نقطة الغليان أو نقطة الغليان الأولية ونطاق الغليان

100 °C

**Flammability**

Not applicable.

**Upper or lower flammability or explosive limits****Lower:**

Not determined.

**Upper:**

Not determined.

**Flash point:**

Not applicable.

**Decomposition temperature:**

Not determined.

**pH**

Not determined.

(Contd. on page 6)

## Trade name: Reagent COD2 (B)

(Contd. of page 5)

<b>Viscosity:</b>	
<b>Viscosity</b>	<i>Not determined.</i>
<b>Dynamic:</b>	<i>Not determined.</i>
<b>Solubility</b>	
<b>water:</b>	<i>Fully miscible.</i>
<b>Partition coefficient: n-octanol or water</b>	<i>Not determined.</i>
<b>Vapour pressure at 20 °C:</b>	<i>23 hPa</i>
<b>Vapour density + Relative density</b>	
<b>Density at 20 °C:</b>	<i>1.117 g/cm<sup>3</sup></i>
<b>Relative density</b>	<i>Not determined.</i>
<b>Vapour density</b>	<i>Not determined.</i>
<b>Other information</b>	
<b>Appearance:</b>	
<b>Form:</b>	<i>Fluid</i>
<b>Important information on protection of health and environment, and on safety.</b>	
<b>Auto-ignition temperature:</b>	<i>Product is not selfigniting.</i>
<b>Explosive properties:</b>	<i>Product does not present an explosion hazard. Not determined.</i>
<b>Solvent content:</b>	
<b>Water:</b>	<i>77.7 %</i>
<b>Solids content:</b>	<i>0.0 %</i>
<b>Change in condition</b>	
<b>Evaporation rate</b>	<i>Not determined.</i>
<b>Information with regard to physical hazard classes</b>	
<b>Explosives</b>	<i>Void</i>
<b>Flammable gases</b>	<i>Void</i>
<b>Aerosols</b>	<i>Void</i>
<b>Oxidising gases</b>	<i>Void</i>
<b>Gases under pressure</b>	<i>Void</i>
<b>Flammable liquids</b>	<i>Void</i>
<b>Flammable solids</b>	<i>Void</i>
<b>Self-reactive substances and mixtures</b>	<i>Void</i>
<b>Pyrophoric liquids</b>	<i>Void</i>
<b>Pyrophoric solids</b>	<i>Void</i>
<b>Self-heating substances and mixtures</b>	<i>Void</i>
<b>Substances and mixtures, which emit flammable gases in contact with water</b>	<i>Void</i>
<b>Oxidising liquids</b>	<i>Void</i>
<b>Oxidising solids</b>	<i>Void</i>
<b>Organic peroxides</b>	<i>Void</i>
<b>Corrosive to metals</b>	<i>Void</i>
<b>Desensitised explosives</b>	<i>Void</i>

**SECTION 10: Stability and reactivity****Reactivity** *No further relevant information available.***Chemical stability****Thermal decomposition / conditions to be avoided:***No decomposition if used according to specifications.***Possibility of hazardous reactions** *No dangerous reactions known.***Conditions to avoid** *No further relevant information available.***Incompatible materials:** *No further relevant information available.***Hazardous decomposition products:** *No dangerous decomposition products known.*

(Contd. on page 7)



Trade name: Reagent COD2 (B)

(Contd. of page 6)

**SECTION 11: Toxicological information****Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity** *Toxic if inhaled.***LD/LC50 values relevant for classification:****CAS: 7778-50-9 Potassium dichromate**

Oral | LD50 | 190 mg/kg (Mouse)

**Skin corrosion or irritation** *Causes severe skin burns and eye damage.***Serious eye damage or irritation** *Causes serious eye damage.***Respiratory and skin sensitization***May cause allergy or asthma symptoms or breathing difficulties if inhaled.**May cause an allergic skin reaction.***Germ cell mutagenicity** *May cause genetic defects.***Carcinogenicity** *May cause cancer.***Reproductive toxicity** *May damage fertility. May damage the unborn child.***Specific target organ toxicity – repeated exposure***May cause damage to the respiratory system through prolonged or repeated exposure.***Information on other hazards****endocrine disrupting potential***None of the ingredients is listed.***SECTION 12: Ecological information****Toxicity****Aquatic toxicity:** *No further relevant information available.***Persistence and degradability** *No further relevant information available.***Bioaccumulative potential** *No further relevant information available.***Mobility in soil** *No further relevant information available.***Results of PBT and vPvB assessment****PBT:** *Not applicable.***vPvB:** *Not applicable.***Endocrine disrupting properties***The product does not contain substances with endocrine disrupting properties.***Other adverse effects****Remark:** *Harmful to fish***Additional ecological information:****General notes:***Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water**Do not allow product to reach ground water, water course or sewage system, even in small quantities.**Must not reach sewage water or drainage ditch undiluted or unneutralised.**Danger to drinking water if even extremely small quantities leak into the ground.**Harmful to aquatic organisms***SECTION 13: Disposal considerations****Waste treatment methods****Recommendation***Must not be disposed together with household garbage. Do not allow product to reach sewage system.***Uncleaned packaging:****Recommendation:** *Disposal must be made according to official regulations.***Recommended cleansing agents:** *Water, if necessary together with cleansing agents.*

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**Trade name: Reagent COD2 (B)**

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**\* SECTION 14: Transport information**

**UN number**  
**IMDG, IATA** UN2922  
**UN proper shipping name**  
**ADR** *UN2922 CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, Potassium dichromate)*  
**IMDG** *CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, Potassium dichromate)*  
**IATA** *Corrosive liquid, toxic, n.o.s. (containing SULPHURIC ACID, Potassium dichromate)*

**Transport hazard class(es)**

**ADR**



**Class** *8 (CT1) Corrosive substances.*  
**Label** *8+6.1*

**IMDG**



**Class** *8 Corrosive substances.*  
**Label** *8/6.1*

**IATA**



**Class** *8 Corrosive substances.*  
**Label** *8 (6.1)*  
**Packing group** *II*  
**ADR, IMDG, IATA** *II*  
**Environmental hazards:** *Not applicable.*  
**Special precautions for user** *Warning: Corrosive substances.*

**Hazard identification number (Kemler code):** *86*  
**EMS Number:** *F-A,S-B*  
**Stowage Category** *B*  
**Stowage Code** *SW2 Clear of living quarters.*

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** *Not applicable.*

**Transport/Additional information:**

**ADR**

**Limited quantities (LQ)** *1L*  
**Transport category** *2*  
**Tunnel restriction code** *E*

**IMDG**

**Limited quantities (LQ)** *1L*

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## Trade name: Reagent COD2 (B)

(Contd. of page 8)

Excepted quantities (EQ)

Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

UN "Model Regulation":

UN 2922 CORROSIVE LIQUID, TOXIC, N.O.S.  
(SULPHURIC ACID, POTASSIUM DICHROMATE), 8  
(6.1), II

## \* SECTION 15: Regulatory information

## Safety, health and environmental regulations specific for the product in question

## GHS label elements

The product is classified and labelled according to the Globally Harmonised System (GHS).

## Hazard pictograms



GHS05 GHS06 GHS08

Signal word *Danger*

## Hazard-determining components of labelling:

*sulphuric acid**Potassium dichromate*

## Hazard statements

*Toxic if inhaled.**Causes severe skin burns and eye damage.**May cause allergy or asthma symptoms or breathing difficulties if inhaled.**May cause an allergic skin reaction.**May cause genetic defects.**May cause cancer.**May damage fertility. May damage the unborn child.**May cause damage to the respiratory system through prolonged or repeated exposure.**Harmful to aquatic life with long lasting effects.*

## Precautionary statements

*IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].**IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.**Immediately call a POISON CENTER/doctor.**Specific treatment (see on this label).**Take off contaminated clothing and wash it before reuse.**Store locked up.**Dispose of contents/container in accordance with local/regional/national/international regulations.*

## Directive 2012/18/EU

Named dangerous substances - ANNEX I *None of the ingredients is listed.*Seveso category H2 *ACUTE TOXIC*Qualifying quantity (tonnes) for the application of lower-tier requirements *50 t*Qualifying quantity (tonnes) for the application of upper-tier requirements *200 t*

## National regulations:

Additional classification according to Decree on Hazardous Materials, Annex II:

*Carcinogenic hazardous material group III (dangerous).*

## Information about limitation of use:

*Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation. Exceptions can be made by the authorities in certain cases.*Waterhazard class: *Water hazard class 3 (Self-assessment): extremely hazardous for water.*

(Contd. on page 10)

**Trade name: Reagent COD2 (B)**

(Contd. of page 9)

**Other regulations, limitations and prohibitive regulations****Substances of very high concern (SVHC) according to REACH, Article 57**

CAS: 7778-50-9 | Potassium dichromate

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.**SECTION 16: Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

**Department issuing SDS:** PCC-TWR**Contact:** MSDS.pcc@endress.com**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organisation

ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

SVHC: Substances of Very High Concern

vPvB: very Persistent and very Bioaccumulative

Ox. Sol. 2: Oxidizing solids – Category 2

Acute Tox. 3: Acute toxicity – Category 3

Acute Tox. 4: Acute toxicity – Category 4

Acute Tox. 2: Acute toxicity – Category 2

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Resp. Sens. 1: Respiratory sensitisation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

Muta. 1B: Germ cell mutagenicity – Category 1B

Carc. 1B: Carcinogenicity – Category 1B

Repr. 1B: Reproductive toxicity – Category 1B

STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

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

**SECTION 1: Identification of the substance or mixture and of the supplier****Product identifier**Trade name: **Reagent COD3 (A+B)**

Article number: 71251190A

**CAS Number:**

57-50-1

**EC number:**

200-334-9

**Recommended use of the chemical and restrictions on use** *No further relevant information available.***Application of the substance / the mixture** *Laboratory chemicals***Supplier's details****Manufacturer/Supplier:***Endress+Hauser**Conducta GmbH+Co. KG**Dieselstraße 24**D-70839 Gerlingen***Further information obtainable from:***Phone: +49 (0)7156 209-10117**E-Mail: MSDS.PCC@endress.com***Emergency phone number** +27 (0)861 555 777**SECTION 2: Hazard identification****Classification of the substance or mixture***The substance is not classified, according to the Globally Harmonised System (GHS).***GHS label elements****GHS label elements** *Void***Hazard pictograms** *Void***Signal word** *Void***Hazard statements** *Void***Other hazards***The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.***Results of PBT and vPvB assessment****PBT:** *Not applicable.***vPvB:** *Not applicable.***SECTION 3: Composition or information on ingredients****Substances****CAS No. Description***CAS: 57-50-1 sucrose***Identification number(s)***EC number: 200-334-9***SECTION 4: First-aid measures****Description of necessary first-aid measures****General information:** *No special measures required.***After inhalation:** *Supply fresh air; consult doctor in case of complaints.***After skin contact:** *Generally the product does not irritate the skin.***After eye contact:** *Rinse opened eye for several minutes under running water.***After swallowing:** *If symptoms persist consult doctor.*

Trade name: Reagent COD3 (A+B)

(Contd. of page 1)

**Most important symptoms or effects, acute and delayed** *No further relevant information available.***Indication of immediate medical attention and special treatment needed, if necessary***No further relevant information available.***SECTION 5: Fire-fighting measures****Suitable extinguishing media****Suitable extinguishing agents:***CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.***For safety reasons unsuitable extinguishing agents:** *no further information***Specific hazards arising from the chemical** *No further relevant information available.***Special protective actions for fire fighters** *No further relevant information available.***Protective equipment:** *No special measures required.***SECTION 6: Accidental release measures****Personal precautions, protective equipment and emergency procedures** *Wear protective clothing.***Environmental precautions:** *No special measures required.***Methods and material for containment and cleaning up:** *Pick up mechanically.***Reference to other sections***No dangerous substances are released.**See Section 7 for information on safe handling.**See Section 8 for information on personal protection equipment.**See Section 13 for disposal information.***SECTION 7: Handling and storage****Precautions for safe handling***Do not dry clean dust covered objects and floors. Wash thoroughly with plenty of water.**No special measures required.***Information about fire - and explosion protection:** *No special measures required.***Conditions for safe storage, including any incompatibilities****Storage:****Requirements to be met by storerooms and receptacles:** *No special requirements.***Information about storage in one common storage facility:** *Not required.***Further information about storage conditions:** *None.***Storage class:** 11**Specific end use(s)** *No further relevant information available.***\* SECTION 8: Exposure controls or personal protection****Control parameters****Ingredients with limit values that require monitoring at the workplace:****CAS: 57-50-1 sucrose**OEL | Long-term value: 10 mg/m<sup>3</sup>**Additional information:** *The lists valid during the making were used as basis.***Exposure controls****Appropriate engineering controls** *No further data; see item 7.***Individual protection measures, such as personal protective equipment (PPE)****General protective and hygienic measures:***The usual precautionary measures are to be adhered to when handling chemicals.***Respiratory protection:** *Not required.***Hand protection** *No chemical-protective gloves required.*

(Contd. on page 3)

**Trade name: Reagent COD3 (A+B)**

(Contd. of page 2)

**Material of gloves**

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

**Penetration time of glove material**

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

**Eye or face protection** Not required.

**Body protection:** Protective work clothing

**SECTION 9: Physical and chemical properties****Information on basic physical and chemical properties****General Information****Physical state**

Solid

**Colour:**

Colourless

**Odour:**

Odourless

**Odour threshold:**

Not determined.

**Melting point/freezing point:**

Undetermined.

**نقطة الغليان أو نقطة الغليان الأولية ونطاق الغليان**

Undetermined.

**Flammability**

Product is not flammable.

**Upper or lower flammability or explosive limits****Lower:**

Not determined.

**Upper:**

Not determined.

**Flash point:**

Not applicable.

**Decomposition temperature:**

Not determined.

**pH**

Not applicable.

**Viscosity:****Viscosity**

Not applicable.

**Dynamic:**

Not applicable.

**Solubility****water:**

Soluble.

**Partition coefficient: n-octanol or water**

Not determined.

**Vapour pressure:**

Not applicable.

**Vapour density + Relative density****Density at 20 °C:**0.94 g/cm<sup>3</sup>**Relative density**

Not determined.

**Vapour density**

Not applicable.

**Other information****Appearance:****Form:**

Crystalline powder

**Important information on protection of health and environment, and on safety.****Auto-ignition temperature:**

Not determined.

**Explosive properties:**

Product does not present an explosion hazard.

Not determined.

**Change in condition****Evaporation rate**

Not applicable.

**Information with regard to physical hazard classes****Explosives**

Void

**Flammable gases**

Void

**Aerosols**

Void

**Oxidising gases**

Void

**Gases under pressure**

Void

**Flammable liquids**

Void

(Contd. on page 4)

## Trade name: Reagent COD3 (A+B)

(Contd. of page 3)

Flammable solids	Void
Self-reactive substances and mixtures	Void
Pyrophoric liquids	Void
Pyrophoric solids	Void
Self-heating substances and mixtures	Void
Substances and mixtures, which emit flammable gases in contact with water	Void
Oxidising liquids	Void
Oxidising solids	Void
Organic peroxides	Void
Corrosive to metals	Void
Desensitised explosives	Void

**SECTION 10: Stability and reactivity****Reactivity** No further relevant information available.**Chemical stability****Thermal decomposition / conditions to be avoided:**

No decomposition if used according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known.**Conditions to avoid** No further relevant information available.**Incompatible materials:** No further relevant information available.**Hazardous decomposition products:** No dangerous decomposition products known.**SECTION 11: Toxicological information**

Information on hazard classes as defined in Regulation (EC) No 1272/2008

**Acute toxicity****LD/LC50 values relevant for classification:****CAS: 57-50-1 sucrose**

Oral | LD50 | 29,700 mg/kg (rat)

**Information on other hazards****endocrine disrupting potential**

Substance is not listed.

**SECTION 12: Ecological information****Toxicity****Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Bioaccumulative potential** No further relevant information available.**Mobility in soil** No further relevant information available.**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**Endocrine disrupting properties**

The product does not contain substances with endocrine disrupting properties.

**Other adverse effects****Additional ecological information:****General notes:** Not hazardous for water.**SECTION 13: Disposal considerations****Waste treatment methods****Recommendation** Smaller quantities can be disposed of with household waste.

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**Trade name: Reagent COD3 (A+B)**

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(Contd. of page 4)

**Uncleaned packaging:****Recommendation:** *Disposal must be made according to official regulations.***Recommended cleansing agents:** *Water, if necessary together with cleansing agents.*

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**SECTION 14: Transport information****UN number****ADN, IMDG, IATA** Void**UN proper shipping name****ADR, ADN, IMDG, IATA** Void**Transport hazard class(es)****ADR, ADN, IMDG, IATA****Class** Void**Packing group****ADR, IMDG, IATA** Void**Environmental hazards:****Marine pollutant:** No**Special precautions for user** Not applicable.**Transport in bulk according to Annex II of****MARPOL 73/78 and the IBC Code** Not applicable.**Transport/Additional information:** Not dangerous according to the above specifications.**UN "Model Regulation":** Void

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**SECTION 15: Regulatory information****Safety, health and environmental regulations specific for the product in question****GHS label elements** Void**Hazard pictograms** Void**Signal word** Void**Hazard statements** Void**Directive 2012/18/EU****Named dangerous substances - ANNEX I** Substance is not listed.**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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**SECTION 16: Other information**

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

**Department issuing SDS:** PCC-TWR**Contact:** *MSDS.pcc@endress.com***Abbreviations and acronyms:***RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)**ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)**IMDG: International Maritime Code for Dangerous Goods**IATA: International Air Transport Association**EINECS: European Inventory of Existing Commercial Chemical Substances**CAS: Chemical Abstracts Service (division of the American Chemical Society)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative***\* Data compared to the previous version altered.**

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