according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 01/26/2015

Version1.2

SECTION 1.Identification

Product identifier

Catalog No. 114540

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Reagent for analysis

Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821,

United States of America | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)

Emergency telephone 800-424-9300 CHEMTREC (USA)

+1-703-527-3887 CHEMTREC (International)

24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Corrosive to Metals, Category 1, H290

Acute toxicity, Category 4, Oral, H302

Acute toxicity, Category 4, Inhalation, H332

Acute toxicity, Category 3, Dermal, H311

Skin corrosion, Category 1A, H314

Serious eye damage, Category 1, H318

Respiratory sensitization, Category 1, H334

Skin sensitization, Category 1, H317

Germ cell mutagenicity, Category 1B, H340

Carcinogenicity, Category 1B, H350

Reproductive toxicity, Category 1B, H360

Specific target organ systemic toxicity - repeated exposure, Category 2, Kidney, H373

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms









according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Signal Word Danger

Hazard Statements

H340 May cause genetic defects.

H350 May cause cancer.

H360 May damage fertility or the unborn child.

H290 May be corrosive to metals.

H302 + H332 Harmful if swallowed or if inhaled.

H311 Toxic in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H373 May cause damage to organs (Kidney) through prolonged or repeated exposure.

Precautionary Statements

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P234 Keep only in original container.

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/ physician.

P322 Specific measures (see supplemental first aid instructions on this label).

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P361 Remove/Take off immediately all contaminated clothing.

P363 Wash contaminated clothing before reuse.

P390 Absorb spillage to prevent material damage.

P405 Store locked up.

P406 Store in corrosive resistant stainless steel container with a resistant inliner.

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroguant®

COD

Chemical nature Sulfuric acid solution.

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

sulphuric acid (>= 70 % - < 90 %)

7664-93-9

mercury(II) sulphate (>= 1 % - < 5 %)

7783-35-9

potassium dichromate (>= 0.1 % - < 1 %)

7778-50-9

Exact percentages are being wihtheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. Call in physician.

Skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/

shower. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion, Cough, Shortness of breath

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms: acute: contact with eye causes severe lesions. Swallowing and inhalation of dusts damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhea, intestinal burns, glottal oedema, aspiration pneumonia); drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure; chronic: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing, and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

Risk of blindness!

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Not combustible.

Ambient fire may liberate hazardous vapors.

Fire may cause evolution of:

Sulfur oxides, mercury vapors

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

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

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

Store at +15°C to +25°C (+59°F to +77°F).

The data applies to the entire pack.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis Value Threshold Remarks

limits

sulphuric acid (7664-93-9)

ACGIH Time Weighted Average 0.2 mg/m³ Form of exposure: Thoracic fraction.

(TWA): NIOSH/GUIDE Recommended

1 mg/m³ exposure limit (REL):

OSHA_TRANS PEL: 1 mg/m³

Time Weighted Average Z1A 1 mg/m³

(TWA):

mercury(II) sulphate (7783-35-9)

ACGIH Time Weighted Average 0.025 mg/m³ Expressed as: as Hg

(TWA):

Can be absorbed through the skin. Skin designation:

Expressed as: as Hg

NIOSH/GUIDE Ceiling Limit Value and 0.1 ppm Expressed as: as Hg

Time Period (if specified):

Skin designation: Can be absorbed through the skin.

Expressed as: as Hg

Z1A Ceiling Limit Value: 0.1 mg/m³ Expressed as: as Hg

> Skin designation (Final Can be absorbed through the skin. Expressed as: as Hg Rule Limit applies):

ACGIH Time Weighted Average 0.025 mg/m³ Expressed as: as Hg

(TWA):

Skin designation: Can be absorbed through the skin.

Expressed as: as Hg

potassium dichromate (7778-50-9)

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Expressed as: as Cr

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

ACGIH Time Weighted Average 0.05 mg/m³ Expressed as: as Cr

(TWA):
NIOSH/GUIDE Recommended 0.001 mg/m³ Expressed as: as Cr(VI)

exposure limit (REL):

Recommended 0.5 mg/m³

exposure limit (REL):

OSHA_TRANS PEL: 1 mg/m³ Expressed as: as Cr

Z1A Time Weighted Average 1 mg/m³

(TWA):

Ceiling Limit Value: 0.1 mg/m³ Expressed as: as CrO3

OSHA/Z2 Ceiling Limit Value: 0.1 mg/m³

Engineering measures

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Change contaminated clothing and immerse in water. Preventive skin protection Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Acid-resistant protective clothing.

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state liquid

Color dark orange

Odor odorless

Odor Threshold Not applicable

pH < 0.5

at 68 °F (20 °C)

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Melting point No information available.

Boiling point No information available.

Flash point No information available.

Evaporation rate No information available.

Flammability (solid, gas) No information available.

Lower explosion limit No information available.

Upper explosion limit No information available.

Vapor pressure No information available.

Relative vapor density No information available.

Density ca.1.8 g/cm³

at 68 °F (20 °C)

Relative density No information available.

Water solubility at 68 °F (20 °C)

soluble, (development of heat)

Partition coefficient: n-

octanol/water

No information available.

Autoignition temperature No information available.

Decomposition temperature No information available.

Viscosity, dynamic No information available.

Explosive properties Not classified as explosive.

Oxidizing properties Oxidizing potential

Corrosion May be corrosive to metals.

SECTION 10. Stability and reactivity

Reactivity

See below

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

A risk of explosion and/or of toxic gas formation exists with the following substances:

Violent reactions possible with:

Water, Alkali metals, alkali compounds, Ammonia, Aldehydes, acetonitrile, Alkaline earth metals, alkalines, Acids, alkaline earth compounds, Metals, metal alloys, Oxides of phosphorus, phosphorus, hydrides, halogen-halogen compounds, oxyhalogenic compounds, permanganates, nitrates, carbides, combustible substances, organic solvent, acetylidene, Nitriles, organic nitro compounds, anilines, Peroxides, picrates, nitrides, lithium silicide, iron(III) compounds, bromates, chlorates, Amines, perchlorates, hydrogen peroxide

Conditions to avoid

no information available

Incompatible materials

animal/vegetable tissues, Metals Gives off hydrogen by reaction with metals.

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Eye contact, Skin contact
Target Organs
Eyes

Skin

Respiratory system

teeth

Mucous membranes

Lungs

upper respiratory system

Cornea

Acute oral toxicity

Acute toxicity estimate: 691.12 mg/kg

Calculation method

absorption

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Acute inhalation toxicity

Acute toxicity estimate: > 5 mg/l; 4 h

Calculation method

Acute dermal toxicity

Acute toxicity estimate: 691.05 mg/kg

Calculation method

absorption

Skin irritation

Mixture causes severe burns.

Eye irritation

Mixture causes serious eye damage.

Risk of blindness!

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

Target Organs: KidneyMixture may cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC Group 1: Carcinogenic to humans

sulphuric acid 7664-93-9

potassium dichromate 7778-50-9

OSHA

ACGIH

potassium dichromate 7778-50-9

NTP Known carcinogen.

sulphuric acid 7664-93-9 potassium dichromate 7778-50-9

A1: Confirmed human carcinogen

potassium dichromate 7778-50-9

A2: Suspected human carcinogen

sulphuric acid 7664-93-9

Further information

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 diarrhea. After a latency period of several weeks possibly pyloric stenosis.

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms: acute: contact with eye causes severe lesions. Swallowing and inhalation of dusts damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhea, intestinal burns, glottal oedema, aspiration pneumonia); drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure; chronic: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing, and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

Danger of cumulative effects.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Ingredients

sulphuric acid

Germ cell mutagenicity Genotoxicity in vitro Ames test Salmonella typhimurium Result: negative (HSDB)

mercury(II) sulphate

Acute inhalation toxicity
Acute toxicity estimate: 0.051 mg/l; dust/mist
Expert judgment

potassium dichromate

Acute oral toxicity LD50 Rat: 90.5 mg/kg OECD Test Guideline 401

Acute inhalation toxicity

LC50 Rat: 0.083 mg/l; 4 h; aerosol

OECD Test Guideline 403

Acute dermal toxicity

LD50 Rat: 1,170 mg/kg (IUCLID)

Skin irritation

Rabbit

Result: Causes burns. OECD Test Guideline 404

Sensitization

Sensitization test (Magnusson and Kligman):

Result: positive (IUCLID)

Patch test: human Result: positive (IUCLID)

SECTION 12. Ecological information

Ecotoxicity

No information available.

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Persistence and degradability

No information available.

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Additional ecological information

Discharge into the environment must be avoided.

Ingredients

sulphuric acid

Toxicity to daphnia and other aquatic invertebrates static test EC50 Daphnia magna (Water flea): > 100 mg/l; 48 h OECD Test Guideline 202

Substance does not meets the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII. mercury(II) sulphate

Toxicity to fish

LC50 Pimephales promelas (fathead minnow): 0.19 mg/l; 96 h (Hommel)

Toxicity to algae

IC5 M.aeruginosa: 0.005 mg/l(maximum permissible toxic concentration) (Hommel)

M-Factor 1

potassium dichromate

Toxicity to fish

LC50 Pimephales promelas (fathead minnow): 26.13 mg/l; 96 h (IUCLID)

LC50 Lepomis macrochirus (Bluegill sunfish): 0.131 mg/l; 96 h (External MSDS)

Toxicity to daphnia and other aquatic invertebrates

Immobilization EC50 Daphnia magna (Water flea): 0.62 mg/l; 48 h

OECD Test Guideline 202

EC50 Daphnia magna (Water flea): 0.035 mg/l; 48 h (External MSDS)

Toxicity to algae

IC50 Chlorella vulgaris (Fresh water algae): 0.16 - 0.59 mg/l; 96 h (IUCLID)

EC50 Pseudokirchneriella subcapitata (green algae): 0.31 mg/l; 72 h (External MSDS)

Toxicity to bacteria

microtox test EC50 Photobacterium phosphoreum: 58 mg/l; 30 min

Toxicity to fish (Chronic toxicity)

NOEC Pimephales promelas (fathead minnow): 6 mg/l; 7 d

(External MSDS)

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) NOEC Daphnia: 0.016 - 0.064 mg/l; 7 d

(External MSDS)

Biodegradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulation

Bioconcentration factor (BCF): 17.4

Oncorhynchus mykiss (rainbow trout) ((External MSDS))

M-Factor

1

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number UN3316

Proper shipping name CHEMICAL KIT

Class 9
Packing group II
Environmentally hazardous ---

Air transport (IATA)

UN number UN 3316

Proper shipping name CHEMICAL KIT

Class 9
Packing group II
Environmentally hazardous -Special precautions for user no

Sea transport (IMDG)

UN number UN 3316

Proper shipping name CHEMICAL KIT

Class 9
Packing group II
Environmentally hazardous --

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

Special precautions for user yes F-A S-P **EmS**

THIS TRANSPORT DATA APPLIES TO THE ENTIRE PACK!

SECTION 15. Regulatory information

United States of America

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

sulphuric acid 7664-93-9 potassium dichromate 7778-50-9 mercury(II) sulphate 7783-35-9

SARA 302

The following components are subject to reporting levels established by SARA Title III, Section

302:

Ingredients

sulphuric acid 7664-93-9

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Ingredients sulphuric acid

potassium dichromate

mercury(II) sulphate

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients

sulphuric acid

potassium dichromate

mercury(II) sulphate

DEA List I

Not listed

DEA List II

Listed

Ingredients

sulphuric acid 7664-93-9

US State Regulations

Massachusetts Right To Know

Ingredients

sulphuric acid

mercury(II) sulphate

Pennsylvania Right To Know

Ingredients

sulphuric acid

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

mercury(II) sulphate

New Jersey Right To Know

Ingredients sulphuric acid mercury(II) sulphate potassium dichromate

California Prop 65 Components

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Ingredients

potassium dichromate mercury(II) sulphate

California Prop 65 Components

WARNING: this product contains a chemical known in the State of California to cause cancer.

Ingredients sulphuric acid potassium dichromate

Notification status

TSCA: All components of the product are listed in the TSCA-inventory.

DSL: All components of this product are on the Canadian DSL.

KOREA: Not in compliance with the inventory

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 114540 Version1.2

Product name COD Cell Test Method: photometric 10 - 150 mg/l Spectroquant®

COD

Full text of H-Statements referred to under sections 2 and 3.

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H340	May cause genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date01/26/2015

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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