Safety Data Sheet

According to Annex II to REACH - Regulation 2015/830

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Code	**HI94754B-0**
Product name	**COD MR Reagent with Bar Code**

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

Intended use	**Determination of Chemical Oxygen Demand in Water Samples - Restricted to professional use.**

1.3. Details of the supplier of the safety data sheet

Name	**Hanna Instruments S.R.L.**
Full address	**str. Hanna Nr 1**
District and Country	**457260 loc. Nusfalau (Salaj)** **Romania**
	Tel. +40 260607700
	Fax +40 260607700
e-mail address of the competent person responsible for the Safety Data Sheet	**msds@hanna.ro**

1.4. Emergency telephone number

For urgent inquiries refer to	**Emergency Number - International: +1 7035273887 - UK, London: +44 8708200418 - CHEMTREC 24 hours/365 days**

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2015/830.
Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Substance or mixture corrosive to metals, category 1	H290	May be corrosive to metals.
Carcinogenicity, category 1B	H350	May cause cancer.
Germ cell mutagenicity, category 1B	H340	May cause genetic defects.
Reproductive toxicity, category 1B	H360FD	May damage fertility. May damage the unborn child.
Acute toxicity, category 1	H300	Fatal if swallowed.
Acute toxicity, category 1	H310	Fatal in contact with skin.
Acute toxicity, category 1	H330	Fatal if inhaled.
Specific target organ toxicity - repeated exposure, category 2	H373	May cause damage to organs through prolonged or repeated exposure.
Skin corrosion, category 1A	H314	Causes severe skin burns and eye damage.
Serious eye damage, category 1	H318	Causes serious eye damage.
Respiratory sensitization, category 1B	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitization, category 1A	H317	May cause an allergic skin reaction.
Hazardous to the aquatic environment, acute toxicity, category 1	H400	Very toxic to aquatic life.
Hazardous to the aquatic environment, chronic toxicity, category 1	H410	Very toxic to aquatic life with long lasting effects.

SECTION 2. Hazards identification ... / >>

2.2. Label elements

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:

Signal words: Danger

Hazard statements:

H290	May be corrosive to metals.
H350	May cause cancer.
H340	May cause genetic defects.
H360FD	May damage fertility. May damage the unborn child.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H330	Fatal if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H314	Causes severe skin burns and eye damage.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H410	Very toxic to aquatic life with long lasting effects.
EUH208	Contains: POTASSIUM DICHROMATE May produce an allergic reaction.
	Restricted to professional users.

Precautionary statements:

P310	Immediately call a POISON CENTER or doctor.
P201	Obtain special instructions before use.
P260	Do not breathe dust, fume, gas, mist, vapours, spray.
P280	Wear protective gloves / protective clothing / eye protection / face protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep 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.
P391	Collect spillage.

Contains:
POTASSIUM DICHROMATE
MERCURY (II) SULFATE
SULPHURIC ACID

2.3. Other hazards

On the basis of available data, the product does not contain any PBT or vPvB in percentage ≥ than 0,1%.

SECTION 3. Composition/information on ingredients

3.2. Mixtures

Contains:

Identification	x = Conc. %	Classification 1272/2008 (CLP)
SULPHURIC ACID		
CAS 7664-93-9	50 ≤ x < 100	**Met. Corr. 1 H290, Skin Corr. 1A H314, Eye Dam. 1 H318,**
EC 231-639-5		**Classification note according to Annex VI to the CLP Regulation: B**
INDEX 016-020-00-8		
Reg. no. 01-2119458838-20		

SECTION 3. Composition/information on ingredients ... / >>

MERCURY (II) SULFATE
CAS *7783-35-9* 0,5 ≤ x < 1 **Acute Tox. 1 H300, Acute Tox. 1 H310, Acute Tox. 2 H330, STOT RE 2 H373, Aquatic Acute 1 H400 M=10, Aquatic Chronic 1 H410 M=1, Classification note according to Annex VI to the CLP Regulation: 1 A**
EC *231-992-5*
INDEX *080-002-00-6*

SILVER SULFATE
CAS *10294-26-5* 0,25 ≤ x < 0,5 **Eye Dam. 1 H318, Aquatic Acute 1 H400 M=1000, Aquatic Chronic 1 H410 M=100**
EC *233-653-7*
INDEX

POTASSIUM DICHROMATE
CAS *7778-50-9* 0,3 ≤ x < 0,5 **Ox. Sol. 2 H272, Carc. 1B H350, Muta. 1B H340, Repr. 1B H360FD, Acute Tox. 2 H330, Acute Tox. 3 H301, Acute Tox. 4 H312, STOT RE 1 H372, Skin Corr. 1B H314, Eye Dam. 1 H318, STOT SE 3 H335, Resp. Sens. 1 H334, Skin Sens. 1 H317, Aquatic Acute 1 H400 M=10, Aquatic Chronic 1 H410 M=1, Classification note according to Annex VI to the CLP Regulation: 3**
EC *231-906-6*
INDEX *024-002-00-6*
Reg. no. *01-2119454792-32*

The full wording of hazard (H) phrases is given in section 16 of the sheet.

SECTION 4. First aid measures

4.1. Description of first aid measures

EYES: Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.
SKIN: Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.
INGESTION: Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.
INHALATION: Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

4.2. Most important symptoms and effects, both acute and delayed

Specific information on symptoms and effects caused by the product are unknown.

SULPHURIC ACID
SULPHURIC ACID 98%: Irritation and corrosion, Cough, Shortness of breath, Nausea, Vomiting, Diarrhoea, Pain, Risk of blindness.

MERCURY (II) SULFATE
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 diarrhoea, 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).

SILVER SULFATE
Irritant effects. Risk of permanent damage due to staining of the cornea.

POTASSIUM DICHROMATE
Irritation and corrosion, Allergic reactions, Cough, Shortness of breath Chromium(VI) is highly toxic. It is absorbed via both the lungs and the gastrointestinal tract. Being strong oxidisers, chromates/ bichromates can cause burns and ulcerations on the skin and mucous membranes and also irritations in the upper respiratory tract. Poorly healing ulcers occur after wound contact. In predisposed persons the substance rapidly leads to sensitisation and allergic reactions of the respiratory tract (risk of pneumonia!) and damage to nasal mucous membranes (under given circumstances perforation of the septum). After swallowing severe symptoms in the gastrointestinal tract such as bloody diarrhoea, vomiting (aspiration pneumonia!), spasms, circulatory collapse, unconsciousness, formation of methaemoglobin. Absorption may result in hepatic and renal damage. Inhalable chromium(VI) compounds gave clear evidence to be carcinogenic in animal experiments. Lethal dose (man): 0.5g. Antidotes: chelating agents such as EDTA, DMPS (Demaval®). Risk of blindness!.

4.3. Indication of any immediate medical attention and special treatment needed

Information not available

SECTION 5. Firefighting measures

5.1. Extinguishing media

SUITABLE EXTINGUISHING EQUIPMENT
The extinguishing equipment should be of the conventional kind: carbon dioxide, foam, powder and water spray.
UNSUITABLE EXTINGUISHING EQUIPMENT
None in particular.

5.2. Special hazards arising from the substance or mixture

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE
Do not breathe combustion products.

SULPHURIC ACID
SULPHURIC ACID 98%: Not combustible, Fire may cause evolution of Sulphur oxides.

MERCURY (II) SULFATE
Not combustible. Avoid shock and friction. Ambient fire may liberate hazardous vapours. Fire may cause evolution of: mercury vapours, iodine, hydrogen iodide.

SILVER SULFATE
Not combustible. Ambient fire may liberate hazardous vapours. Fire may cause evolution of: Sulphur oxides.

POTASSIUM DICHROMATE
Not combustible, has a fire-promoting effect due to release of oxygen.

5.3. Advice for firefighters

GENERAL INFORMATION
Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS
Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

SECTION 6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Block the leakage if there is no hazard.
Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

6.2. Environmental precautions

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

6.3. Methods and material for containment and cleaning up

Collect the leaked product into a suitable container. Evaluate the compatibility of the container to be used, by checking section 10. Absorb the remainder with inert absorbent material.
Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections

Any information on personal protection and disposal is given in sections 8 and 13.

SECTION 7. Handling and storage

7.1. Precautions for safe handling

Ensure that there is an adequate earthing system for the equipment and personnel. Avoid contact with eyes and skin. Do not breathe powders, vapours or mists. Do not eat, drink or smoke during use. Wash hands after use. Avoid leakage of the product into the environment.

SECTION 7. Handling and storage ... / >>

7.2. Conditions for safe storage, including any incompatibilities

Store only in the original container. Store in a ventilated and dry place, far away from sources of ignition. Keep containers well sealed. Keep the product in clearly labelled containers. Avoid overheating. Avoid violent blows. Keep containers away from any incompatible materials, see section 10 for details.

Storage class TRGS 510 (Germany): 6.1A

7.3. Specific end use(s)

Information not available

SECTION 8. Exposure controls/personal protection

8.1. Control parameters

Regulatory References:

AUS	Österreich	Gesamte Rechtsvorschrift für Grenzwerteverordnung 2018, Fassung vom 17.10.2018
BEL	Belgique	AR du 11/3/2002. La liste est mise à jour pour 2017
BGR	България	МИНИСТЕРСТВО НА ТРУДА И СОЦИАЛНАТА ПОЛИТИКА МИНИСТЕРСТВО НА ЗДРАВЕОПАЗВАНЕТО НАРЕДБА No 13 от 30 декември 2003 г (4 Септември 2018г)
CHE	Suisse / Schweiz	Valeurs limites d'exposition aux postes de travail en Suisse: valeurs VME/VLE. Version Juin 2019 (SUVA)
CZE	Česká Republika	Nařízení vlády č. 246/2018 Sb. Nařízení vlády, kterým se mění nařízení vlády č. 361/2007 Sb., kterým se stanoví podmínky ochrany zdraví při práci, ve znění pozdějších předpisů
DEU	Deutschland	TRGS 900 - Seite 1 von 69 (Fassung 29.03.2019)- Liste der Arbeitsplatzgrenzwerte und Kurzzeitwerte
DNK	Danmark	Bekendtgørelse om grænseværdier for stoffer og materialer - BEK nr 1458 af 13/12/2019
ESP	España	LÍMITES DE EXPOSICIÓN PROFESIONAL PARA AGENTES QUÍMICOS EN ESPAÑA 2019 (INSST)
EST	Eesti	Ohtlike kemikaalide ja neid sisaldavate materjalide kasutamise töötervishoiu ja tööohutuse nõuded ning töökeskkonna keemiliste ohutegurite piirnormid [RT I, 17.10.2019, 1 - jõust. 17.01.2020]
FRA	France	Valeurs limites d'exposition professionnelle aux agents chimiques en France. ED 984 - INRS
FIN	Suomi	HTP-VÄRDEN 2018. Koncentrationer som befunnits skadliga. SOCIAL- OCH HÄLSOVÅRDSMINISTERIETS PUBLIKATIONER 10/2018
GRC	Ελλάδα	ΕΦΗΜΕΡΙΔΑ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ - ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 152 - 21 Αυγούστου 2018
HUN	Magyarország	A pénzügyminiszter 7/2018. (VIII. 29.) PM rendelete a munkahelyek kémiai biztonságáról szóló 25/2000. (IX. 30.) EüM–SZCSM együ, TTes rendelet módosításáról.
HRV	Hrvatska	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/18)
ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
IRL	Éire	2018 Code of Practice for the Chemical Agents Regulations Safety Authority
LTU	Lietuva	LIETUVOS HIGIENOS NORMA HN 23:2011 „CHEMINIŲ MEDŽIAGŲ PROFESINIO POVEIKIO RIBINIAI DYDŽIAI. MATAVIMO IR POVEIKIO VERTINIMO BENDRIEJI REIKALAVIMAI. Nr. V-695/A1-272, 2018-06-12, paskelbta TAR 2018-06-15, i. k. 2018-09988
LVA	Latvija	Ķīmisko vielu aroda ekspozīcijas robežvērtības (AER) darba vides gaisā 2018
NOR	Norge	Fastsatt av Arbeids- og sosialdepartementet 21. august 2018 med hjemmel i lov 17. juni 2005 nr. 62 om arbeidsmiljø, arbeidstid, stillingsvern mv. (arbeidsmiljøloven) § 1-3, § 1-4 og § 4-5
NLD	Nederland	Regeling van de Staatssecretaris van Sociale Zaken en Werkgelegenheid van 13 juli 2018, 2018-0000118517 tot wijziging van de Arbeidsomstandighedenregeling in verband met de implementatie van Richtlijn 2017/164 in Bijlage XIII
POL	Polska	ROZPORZĄDZENIE MINISTRA RODZINY, PRACY I POLITYKI SPOŁECZNEJ z dnia 12 czerwca 2018 r
ROU	România	HOTĂRÂRE nr. 584 din 2 august 2018 pentru modificarea Hotărârii Guvernului nr. 1.218/2006 privind stabilirea cerințelor minime de securitate și sănătate în muncă pentru asigurarea protecției lucrătorilor împotriva riscurilor legate de prezența agenților chimici
SWE	Sverige	Hygieniska gränsvärden, AFS 2018:1
SVK	Slovensko	Nariadenie vlády č. 33/2018 Z. z. Nariadenie vlády Slovenskej republiky, ktorým sa mení a dopĺňa nariadenie vlády Slovenskej republiky č. 355/2006 Z. z. o ochrane zamestnancov pred rizikami súvisiacimi s expozíciou chemickým faktorom pri práci v znení neskorších predpisov
SVN	Slovenija	Uradni list Republike Slovenije 20.12.2019 - Uradnem listu RS št. 78/19 -PRAVILNIK o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
GBR	United Kingdom	EH40/2005 Workplace exposure limits (Third edition, published 2018)
EU	OEL EU	Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC.
	TLV-ACGIH	ACGIH 2019

SECTION 8. Exposure controls/personal protection ... / >>

SULPHURIC ACID

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
MAK	AUS	0,1		0,3		INHAL
VLEP	BEL	1		3		
TLV	BGR	1				
MAK	CHE	0,1		0,1		INHAL
TLV	CZE	1		2		
AGW	DEU	0,1		0,1		INHAL
MAK	DEU	0,1		0,1		INHAL
TLV	DNK	1				
VLA	ESP	0,05				
TLV	EST	1		3		
VLEP	FRA	0,05		3		THORA
HTP	FIN	0,05		0,1		
TLV	GRC	0,05				
AK	HUN	1		1		
GVI/KGVI	HRV	1		3		
VLEP	ITA	0,05				THORA
OELV	IRL	0,05	1			
RD	LTU	1		3		
RV	LVA	1				
TLV	NOR	0,1				
TGG	NLD	0,05				THORA
NDS/NDSCh	POL	1		3		
TLV	ROU	0,5		1		
NGV/KGV	SWE	0,1		0,2		
NPEL	SVK	0,1		0,1		
MV	SVN	0,1				INHAL
WEL	GBR	0,05				THORA
OEL	EU	0,05				
TLV-ACGIH		0,2				

Predicted no-effect concentration - PNEC

Normal value in fresh water	0,0025	mg/l
Normal value in marine water	0,00025	mg/l
Normal value for fresh water sediment	0,002	mg/kg
Normal value for marine water sediment	0,002	mg/kg
Normal value of STP microorganisms	8,8	mg/l

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					0,1 mg/m3	VND	0,05 mg/m3	VND

SECTION 8. Exposure controls/personal protection ... / >>

MERCURY (II) SULFATE

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
MAK	AUS	0,02		0,08		Hg compound
VLEP	BEL	0,02				Hg compound
MAK	CHE	0,02		0,16		INHAL
AGW	DEU	0,02		0,16		INHAL
TLV	DNK	0,025		0,05		Hg compound
VLA	ESP	0,02				Hg compound
VLEP	FRA	0,02				Hg compound
AK	HUN	0,08		0,32		Hg compound
OELV	IRL	0,02				Hg compound
NDS/NDSCh	POL	0,02				Hg compound
TLV	ROU	0,02				Hg compound
NGV/KGV	SWE	0,03				Hg compound
WEL	GBR	0,025				Hg compound
OEL	EU	0,02				Hg compound
TLV-ACGIH		0,025				

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation							0,02 mg/m3 8h	VND

SILVER SULFATE

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
MAK	AUS	0,01				INHAL
VLEP	BEL	0,01				Ag compound
MAK	CHE	0,01				Ag compound
AGW	DEU	0,01				Ag compound
TLV	DNK	0,01		0,02		
VLA	ESP	0,01				Ag compound
VLEP	FRA	0,01				Ag compound
AK	HUN	0,01				Ag compound
NDS/NDSCh	POL	0,05				Ag compound
TLV	ROU	0,01				Ag compound
NGV/KGV	SWE	0,01				Ag compound
WEL	GBR	0,01				Ag compound
OEL	EU	0,01				Ag compound
TLV-ACGIH		0,01				Ag compound

Predicted no-effect concentration - PNEC

Normal value in fresh water	0,04	µg/L
Normal value in marine water	0,86	µg/L
Normal value for fresh water sediment	438	mg/kg
Normal value for marine water sediment	438	mg/kg
Normal value of STP microorganisms	0,025	mg/l
Normal value for the terrestrial compartment	0,794	mg/kg/d

SECTION 8. Exposure controls/personal protection ... / >>

POTASSIUM DICHROMATE

Threshold Limit Value

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
MAK	AUS	0,05		0,2		INHAL
VLEP	BEL	0,05				
MAK	CHE	0,05				INHAL
TLV	DNK	0,005		0,01		
VLA	ESP	0,05				Cr
VLEP	FRA	0,001		0,005		
HTP	FIN	0,005				Cr
AK	HUN			0,05		
OELV	IRL	0,05				Water Soluble
TLV	ROU	0,05				
NGV/KGV	SWE	0,005		0,015		
WEL	GBR	0,05				
TLV-ACGIH		0,05				

Predicted no-effect concentration - PNEC

Normal value in fresh water	0	mg/l
Normal value for fresh water sediment	0,15	mg/kg/d
Normal value for marine water sediment	0,15	mg/kg/d

Health - Derived no-effect level - DNEL / DMEL

	Effects on consumers				Effects on workers			
Route of exposure	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					0,01 mg/m3	VND	0,01 mg/m3	VND

Legend:
(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.
VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

SULPHURIC ACID
Methods for measurement of the workplace atmosphere have to correspond to the requirements of norm OSHA ID-113.

MERCURY (II) SULFATE
Methods for measurement of the workplace atmosphere have to correspond to the requirements of norm ISO 17733 - Biological Values, ACGIH: 20 µg mercury/g creatinine in urine, GBR: 20 µmol mercury/mol creatinine in urine (Random), DEU: 25 µg Quecksilber/g Kreatinin Urin (keine Beschränkung) , ESP: 30 µg Mercurio inorgánico total/g creatinina en orina (Antes de la jornadalaboral), ROU: 35 µg mercur/g creatină în urină (începutul schimbului următor).

POTASSIUM DICHROMATE
Cr (VI) - Methods for measurement of the workplace atmosphere have to correspond to the requirements of norms ISO 16740 / NIOSH 7605 - Biological Values, ACGIH: 25 µg/L Total chromium in urine, GBR: 10 µmol chromium/mol creatinine in urine (Post shift), DEU: 20 µg/L Alkalichromate in Urin bei 0.05 mg/Kubikmeter in der Luft (Schichtende), ESP: 10 µg/L cromo total en orina (Principio y final dela jornada laboral), ROU: 10 µg/L crom total în urină (în timpul lucrului).

8.2. Exposure controls

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration.
When choosing personal protective equipment, ask your chemical substance supplier for advice.
Personal protective equipment must be CE marked, showing that it complies with applicable standards.
Provide an emergency shower with face and eye wash station.
The product must be used inside a closed circuit, in a well-ventilated environment and with strong localised aspiration systems in place.
Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).
HAND PROTECTION
Protect hands with category III work gloves (see standard EN 374).
The following should be considered when choosing work glove material: compatibility, degradation, failure time and permeability.
The work gloves' resistance to chemical agents should be checked before use, as it can be unpredictable. The gloves' wear time depends on the duration and type of use.
SKIN PROTECTION
Wear category III professional long-sleeved overalls and safety footwear (see Regulation 2016/425 and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.
EYE PROTECTION
Wear a hood visor or protective visor combined with airtight goggles (see standard EN 166).
In the presence of risks of exposure to splashes or squirts during work, adequate mouth, nose and eye protection should be used to prevent accidental absorption.

SECTION 8. Exposure controls/personal protection ... / >>

RESPIRATORY PROTECTIONIf the threshold value (e.g. TLV-TWA) is exceeded for the substance or one of the substances present in the product, use a mask with a type B filter whose class (1, 2 or 3) must be chosen according to the limit of use concentration. (see standard EN 14387). In the presence of gases or vapours of various kinds and/or gases or vapours containing particulate (aerosol sprays, fumes, mists, etc.) combined filters are required.
Respiratory protection devices must be used if the technical measures adopted are not suitable for restricting the worker's exposure to the threshold values considered. The protection provided by masks is in any case limited.
If the substance considered is odourless or its olfactory threshold is higher than the corresponding TLV-TWA and in the case of an emergency, wear open-circuit compressed air breathing apparatus (in compliance with standard EN 137) or external air-intake breathing apparatus (in compliance with standard EN 138). For a correct choice of respiratory protection device, see standard EN 529.

ENVIRONMENTAL EXPOSURE CONTROLS
The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.
Product residues must not be indiscriminately disposed of with waste water or by dumping in waterways.

SECTION 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	dense liquid	
Colour	orange	
Odour	odourless	
Odour threshold	Not available	
pH	0,5	
Melting point / freezing point	Not available	
Initial boiling point	Not available	
Boiling range	Not available	
Flash point	Not applicable	
Evaporation rate	Not available	
Flammability (solid, gas)	Not available	
Lower inflammability limit	Not available	
Upper inflammability limit	Not available	
Lower explosive limit	Not available	
Upper explosive limit	Not available	
Vapour pressure	Not available	
Vapour density	Not available	
Relative density	1,71	
Solubility	partially soluble in water	
Partition coefficient: n-octanol/water	Not available	
Auto-ignition temperature	Not available	
Decomposition temperature	Not available	
Viscosity	Not available	
Explosive properties	not applicable	
Oxidising properties	Not available	

9.2. Other information

Total solids (250°C / 482°F)	89,73 %

SECTION 10. Stability and reactivity

10.1. Reactivity

There are no particular risks of reaction with other substances in normal conditions of use.

SULPHURIC ACID
SULPHURIC ACID 98%: Decomposes at 450°C/842°F, has a corrosive effect, strong oxidising agent.

SILVER SULFATE
Has a corrosive effect.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

SULPHURIC ACID

SECTION 10. Stability and reactivity ... / >>

SULPHURIC ACID 98%: Stable under standard ambient condition.

MERCURY (II) SULFATE
Sensitivity to light.

SILVER SULFATE
Sensitivity to light. Decomposes on exposure to light.

10.3. Possibility of hazardous reactions

No hazardous reactions are foreseeable in normal conditions of use and storage.

SULPHURIC ACID
SULPHURIC ACID 98%: 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.

MERCURY (II) SULFATE
Violent reactions possible with: Hydrogen halides.

POTASSIUM DICHROMATE
Risk of explosion with Iron, magnesium, hydrazine and derivatives, hydroxylamine, ammonium nitrate, Boron, Acetic anhydride, oxidisable substances, Reducing agents, sulphuric acid, silicon. Exothermic reaction with: anhydrides, phosphides, Sulphides, nitrides, Fluorine. Risk of ignition or formation of inflammable gases or vapours with organic combustible substances, glycerol, Powdered metals, hydrides, alkali compounds, Acetone, with, sulphuric acid. Generates dangerous gases or fumes in contact with hydrochloric acid.

10.4. Conditions to avoid

None in particular. However the usual precautions used for chemical products should be respected.

MERCURY (II) SULFATE
Strong heating.

POTASSIUM DICHROMATE
Strong heating.

10.5. Incompatible materials

SULPHURIC ACID
SULPHURIC ACID 98%: Animal/vegetable tissues, Metals. Contact with metals liberates hydrogen gas.

SILVER SULFATE
Aluminium, Mild steel.

10.6. Hazardous decomposition products

SULPHURIC ACID
SULPHURIC ACID 98%: Sulphur oxide.

SECTION 11. Toxicological information

11.1. Information on toxicological effects

SULPHURIC ACID
SULPHURIC ACID 98% - Skin irritation: causes severe burns - Eye irritation: causes seriuos eye damage, risk of blindness!

MERCURY (II) SULFATE
Acute inhalation toxicity, absorption, Symptoms: Lung oedema, The substance has delayed effects - Acute dermal toxicity, LD50 rat: 625 mg/kg (Regulation (EC) No 1272/2008, Annex VI), absorption - Specific target organ toxicity, repeated exposure: May cause damage to organs through prolonged or repeated exposure.

SILVER SULFATE
Acute inhalation toxicity, Symptoms: Possible damages:, mucosal irritations - Acute dermal toxicity, Symptoms: After long-term exposure to the chemical, discolouration - Skin irritation rabbit, Result: No irritation - Eye irritation, rabbit, Result: Causes burns, Risk of permanent damage due to staining of the cornea. Causes serious eye damage.

SECTION 11. Toxicological information ... / >>

POTASSIUM DICHROMATE
Skin irritation, Rabbit, result: Irritating, Causes burns - Eye irritation: Causes serious eye damage, Risk of blindness! - Sensitisation test (Magnusson and Kligman) result: positive, Patch test human result: positive, May cause allergy or asthma symptoms or breathing difficulties if inhaled, May cause an allergic skin reaction - Carcinogenicity: May cause cancer - Mutagenicity: May cause genetic defects - Teratogenicity: May damage the unborn child - Reproductive toxicity: May damage fertility - Specific target organ toxicity, repeated exposure: Causes damage to organs through prolonged or repeated exposure.

Metabolism, toxicokinetics, mechanism of action and other information

Information not available

Information on likely routes of exposure

Information not available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Information not available

Interactive effects

Information not available

ACUTE TOXICITY

ATE (Inhalation) of the mixture:	4,0 mg/l
ATE (Oral) of the mixture:	49,86 mg/kg
ATE (Dermal) of the mixture:	500,00 mg/kg

POTASSIUM DICHROMATE

LD50 (Oral)	90,5 mg/kg Rat
LD50 (Dermal)	14 mg/kg Rabbit
LC50 (Inhalation)	0,088 mg/l/4h Rat

MERCURY (II) SULFATE

LD50 (Oral)	57 mg/kg Rat
LD50 (Dermal)	625 mg/kg Rat

SILVER SULFATE

LD50 (Oral)	5000 mg/kg Rat - OECD 401

SULPHURIC ACID

LD50 (Oral)	2140 mg/kg Rat

SKIN CORROSION / IRRITATION

Corrosive for the skin
Classification according to the experimental Ph value

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

RESPIRATORY OR SKIN SENSITISATION

Sensitising for the skin
Sensitising for the respiratory system
May produce an allergic reaction.
Contains:
POTASSIUM DICHROMATE

GERM CELL MUTAGENICITY

May cause genetic defects

CARCINOGENICITY

May cause cancer

SECTION 11. Toxicological information ... / >>

REPRODUCTIVE TOXICITY

May damage fertility - May damage the unborn child

STOT - SINGLE EXPOSURE

Does not meet the classification criteria for this hazard class

STOT - REPEATED EXPOSURE

May cause damage to organs

ASPIRATION HAZARD

Does not meet the classification criteria for this hazard class

SECTION 12. Ecological information

This product is dangerous for the environment and highly toxic for aquatic organisms. In the long term, it have negative effects on aquatic environment.

12.1. Toxicity

MERCURY (II) SULFATE
Toxicity to algae, IC5 M.aeruginosa: 0.005 mg/l (maximum permissible toxic concentration).

POTASSIUM DICHROMATE	
LC50 - for Fish	0,131 mg/l/96h Lepomis macrochirus
EC50 - for Crustacea	0,035 mg/l/48h Daphnia magna
EC50 - for Algae / Aquatic Plants	0,31 mg/l/72h Pseudokirchneriella subcapitata
Chronic NOEC for Fish	6 mg/l/7d Pimephales promeas
Chronic NOEC for Crustacea	0,016 mg/l/7d Daphnia
MERCURY (II) SULFATE	
LC50 - for Fish	0,19 mg/l/96h Pimephales promelas
SILVER SULFATE	
EC50 - for Crustacea	0,004 mg/l/48h
SULPHURIC ACID	
LC50 - for Fish	42 mg/l/96h Gambusia affinis
EC50 - for Crustacea	42,5 mg/l/48h
EC50 - for Algae / Aquatic Plants	> 100 mg/l/72h

12.2. Persistence and degradability

POTASSIUM DICHROMATE	
Solubility in water	> 10000 mg/l
Degradability: information not available	
SULPHURIC ACID	
Solubility in water	1000 - 10000 mg/l
Degradability: information not available	

12.3. Bioaccumulative potential

POTASSIUM DICHROMATE	
BCF	17,4
SILVER SULFATE	
BCF	2,5

12.4. Mobility in soil

Information not available

SECTION 12. Ecological information ... / >>

12.5. Results of PBT and vPvB assessment

On the basis of available data, the product does not contain any PBT or vPvB in percentage ≥ than 0,1%.

12.6. Other adverse effects

SULPHURIC ACID
SULPHURIC ACID 98%: Biological effect: Forms corrosive mixture with water even if diluted, Harmful effect due to pH shift, Endangers drinking-water supplies if allowed to enter soil or water, Discharge into the environment must to be avoid.

MERCURY (II) SULFATE
Discharge into the environment must be avoided.

POTASSIUM DICHROMATE
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

13.1. Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.
Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.
Waste transportation may be subject to ADR restrictions.
CONTAMINATED PACKAGING
Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

SECTION 14. Transport information

14.1. UN number

ADR / RID, IMDG, IATA: 2922

14.2. UN proper shipping name

ADR / RID:	CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE, POTASSIUM DICHROMATE) MIXTURE
IMDG:	CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE, POTASSIUM DICHROMATE) MIXTURE
IATA:	CORROSIVE LIQUID, TOXIC, N.O.S. (SULPHURIC ACID, MERCURY SULPHATE, POTASSIUM DICHROMATE) MIXTURE

14.3. Transport hazard class(es)

ADR / RID:	Class: 8	Label: 8 (6.1)	
IMDG:	Class: 8	Label: 8 (6.1)	
IATA:	Class: 8	Label: 8 (6.1)	

14.4. Packing group

ADR / RID, IMDG, IATA: II

SECTION 14. Transport information ... / >>

14.5. Environmental hazards

ADR / RID: Environmentally Hazardous

IMDG: Marine Pollutant

IATA: NO

For Air transport, environmentally hazardous mark is only mandatory for UN 3077 and UN 3082.

14.6. Special precautions for user

ADR / RID:	HIN - Kemler: 86 Special Provision: -	Limited Quantities: 1 L	Tunnel restriction code: (E)
IMDG:	EMS: F-A, S-B	Limited Quantities: 1 L	
IATA:	Cargo:	Maximum quantity: 30 L	Packaging instructions: 855
	Pass.:	Maximum quantity: 1 L	Packaging instructions: 851
	Special Instructions:	A3, A803	

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Information not relevant

SECTION 15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Seveso Category - Directive 2012/18/EC: H1-E1

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

Product
Point 3
Contained substance
Point 18 MERCURY (II) SULFATE
Point 28-29-30-47-72 POTASSIUM DICHROMATE
Reg. no.: 01-2119454792-32

Substances in Candidate List (Art. 59 REACH)
POTASSIUM DICHROMATE
Reg. no.: 01-2119454792-32

Substances subject to authorisation (Annex XIV REACH)
POTASSIUM DICHROMATE
Reg. no.: 01-2119454792-32
Sunset Date: 21/09/2017

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:
None

Substances subject to the Rotterdam Convention:
MERCURY (II) SULFATE - (MERCURY COMPOUNDS)

Substances subject to the Stockholm Convention:
None

Healthcare controls
Workers exposed to this health-dangerous chemical agent must undergo sanitary checks carried out in compliance with 2004/37/EC directive.

German regulation on the classification of substances hazardous to water (AwSV, vom 18. April 2017)
WGK 3: Severe hazard to waters

15.2. Chemical safety assessment

SECTION 15. Regulatory information ... / >>

A chemical safety assessment has been performed for the following contained substances
SULPHURIC ACID

SECTION 16. Other information

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

Ox. Sol. 2	Oxidising solid, category 2
Met. Corr. 1	Substance or mixture corrosive to metals, category 1
Carc. 1B	Carcinogenicity, category 1B
Muta. 1B	Germ cell mutagenicity, category 1B
Repr. 1B	Reproductive toxicity, category 1B
Acute Tox. 1	Acute toxicity, category 1
Acute Tox. 2	Acute toxicity, category 2
Acute Tox. 3	Acute toxicity, category 3
Acute Tox. 4	Acute toxicity, category 4
STOT RE 1	Specific target organ toxicity - repeated exposure, category 1
STOT RE 2	Specific target organ toxicity - repeated exposure, category 2
Skin Corr. 1A	Skin corrosion, category 1A
Skin Corr. 1B	Skin corrosion, category 1B
Eye Dam. 1	Serious eye damage, category 1
STOT SE 3	Specific target organ toxicity - single exposure, category 3
Resp. Sens. 1	Respiratory sensitization, category 1
Resp. Sens. 1B	Respiratory sensitization, category 1B
Skin Sens. 1	Skin sensitization, category 1
Skin Sens. 1A	Skin sensitization, category 1A
Aquatic Acute 1	Hazardous to the aquatic environment, acute toxicity, category 1
Aquatic Chronic 1	Hazardous to the aquatic environment, chronic toxicity, category 1
H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H350	May cause cancer.
H340	May cause genetic defects.
H360FD	May damage fertility. May damage the unborn child.
H300	Fatal if swallowed.
H310	Fatal in contact with skin.
H330	Fatal if inhaled.
H301	Toxic if swallowed.
H312	Harmful in contact with skin.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317	May cause an allergic skin reaction.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

LEGEND:
- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration

SECTION 16. Other information ... / >>

- REACH: EC Regulation 1907/2006 - RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

GENERAL BIBLIOGRAPHY

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2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
4. Regulation (EU) 2015/830 of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
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9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
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14. Regulation (EU) 2018/669 (XI Atp. CLP)
15. Regulation (EU) 2018/1480 (XIII Atp. CLP)
16. Regulation (EU) 2019/521 (XII Atp. CLP)

- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

Note for users:
The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.
This document must not be regarded as a guarantee on any specific product property.
The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.
Provide appointed staff with adequate training on how to use chemical products.

CALCULATION METHODS FOR CLASSIFICATION
Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.
Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.
Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.

Changes to previous review:
The following sections were modified:
01 / 02 / 08 / 15.