

**Safety Data Sheet**  
acc. to OSHA HCS

Printing date 11/14/2018

Reviewed on 11/14/2018

**1 Identification**

- **Product identifier**
- **Trade name: Silver Stain Oxidizer Concentrate**
- **Catalog or product number: 1610444, 1610444EDU**
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Bio-Rad Laboratories, Life Science Group  
2000 Alfred Nobel Drive  
Hercules, California 94547 (510)741-1000
- **Information department:** lsg\_techserv\_us@bio-rad.com
- **Emergency telephone number:**  
1(800)424-9300 Use only in the event of a CHEMICAL EMERGENCY involving a SPILL, LEAK, FIRE, EXPLOSION or ACCIDENT.  
510-741-1000

**2 Hazard(s) identification**

- **Classification of the substance or mixture**

Acute Tox. 4	H302 Harmful if swallowed.
Acute Tox. 3	H331 Toxic if inhaled.
Skin Corr. 1B	H314 Causes severe skin burns and eye damage.
Eye Dam. 1	H318 Causes serious eye damage.
Resp. Sens. 1	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens. 1	H317 May cause an allergic skin reaction.
Muta. 1B	H340 May cause genetic defects.
Carc. 1B	H350 May cause cancer.
Repr. 1A	H360 May damage fertility or the unborn child.
STOT RE 1	H372 Causes damage to organs through prolonged or repeated exposure.
Aquatic Acute 2	H401 Toxic to aquatic life.
Aquatic Chronic 2	H411 Toxic to aquatic life with long lasting effects.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS05 GHS06 GHS08 GHS09

· **Signal word** Danger

· **Hazard-determining components of labeling:**

potassium dichromate  
nitric acid

· **Hazard statements**

H302 Harmful if swallowed.  
H331 Toxic if inhaled.

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- 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.
- H340 May cause genetic defects.
- H350 May cause cancer.
- H360 May damage fertility or the unborn child.
- H372 Causes damage to organs through prolonged or repeated exposure.
- H401 Toxic to aquatic life.
- H411 Toxic to aquatic life with long lasting effects.

**Precautionary statements**

- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- 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/doctor.
- P321 Specific treatment (see on this label).
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**Emergency overview:**

**Routes of exposure:**

- Ingestion
- Inhalation
- Skin

**Classification system**

**Special Hazards**

- Reproductive toxin.
- Carcinogen.

**Other hazards**

**Results of PBT and vPvB assessment**

- PBT:** Not applicable.
- vPvB:** Not applicable.

**3 Composition/information on ingredients**

**Chemical characterization: Mixtures**

**Description:** Mixture of the substances listed below with non-hazardous additions.

**Listing of dangerous and non-hazardous components:**

7778-50-9	potassium dichromate Ox. Sol. 2, H272 Acute Tox. 3, H301; Acute Tox. 2, H330 Resp. Sens. 1, H334; Muta. 1B, H340; Carc. 1B, H350; Repr. 1B, H360; STOT RE 1, H372 Skin Corr. 1B, H314 Aquatic Acute 1, H400; Aquatic Chronic 1, H410 Acute Tox. 4, H312; Skin Sens. 1, H317	5-10%
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**Additional information** For the wording of the listed risk phrases refer to section 15.

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### 4 First-aid measures

- **Description of first aid measures**

- **General information**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Remove breathing apparatus 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**

Immediately call a doctor.

Rinse mouth with water. Seek medical attention and appropriate follow-up.

- **Information for doctor**

- **Most important symptoms and effects, both acute and delayed** Breathing difficulty

- **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**

- **Suitable extinguishing agents** Use fire fighting measures that suit the environment.

- **Special hazards arising from the substance or mixture** During heating or in case of fire poisonous gases are produced.

- **Advice for firefighters**

- **Protective equipment:**

Mount respiratory protective device.

Wear self-contained respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**

Mount respiratory protective device.

Wear protective equipment (See section 8). 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 neutralizing agent.

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

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- **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.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

potassium dichromate	0.42 mg/m <sup>3</sup>
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· **PAC-2:**

7778-50-9 potassium dichromate	8.8 mg/m <sup>3</sup>
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· **PAC-3:**

7778-50-9 potassium dichromate	44 mg/m <sup>3</sup>
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**7 Handling and storage**

- **Handling**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle receptacle with care.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** According to product specification
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

**8 Exposure controls/personal protection**

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**  
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.  
At this time, the remaining constituent has no known exposure limits.

**7697-37-2 nitric acid**

PEL	Long-term value: 5 mg/m <sup>3</sup> , 2 ppm
REL	Short-term value: 10 mg/m <sup>3</sup> , 4 ppm Long-term value: 5 mg/m <sup>3</sup> , 2 ppm
TLV	Short-term value: 10 mg/m <sup>3</sup> , 4 ppm Long-term value: 5.2 mg/m <sup>3</sup> , 2 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment**
- **General protective and hygienic measures**  
Keep away from foodstuffs, beverages and feed.

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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 skin.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:** Protective gloves.

· **Material of gloves** Synthetic gloves

· **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 protection:**

Safety glasses

Tightly sealed goggles.

**9 Physical and chemical properties**

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· <b>Form:</b>	Liquid
· <b>Color:</b>	Dark yellow
· <b>Odor:</b>	Acidic
· <b>Odor threshold:</b>	Not determined.

· **pH-value at 20 °C:** <3

· **Change in condition**

· <b>Melting point/Melting range:</b>	undetermined
· <b>Boiling point/Boiling range:</b>	100 °C

· **Flash point:** Not applicable  
Not determined.

· **Flammability (solid, gaseous)** Not applicable.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.  
Not determined.

· **Explosion limits:**

· <b>Lower:</b>	Not determined.
· <b>Upper:</b>	Not determined.

· **Vapor pressure at 20 °C:** 23 hPa

· <b>Density at 20 °C:</b>	1.06004 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapor density</b>	Not determined.

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· <b>Evaporation rate</b>	Not determined.
· <b>Solubility in / Miscibility with Water:</b>	Fully miscible
· <b>Partition coefficient (n-octanol/water):</b>	Not determined.
· <b>Viscosity:</b> dynamic:	Not determined.
kinematic:	Not determined.
· <b>Solvent content:</b> Water:	89.7 %
<b>Solids content:</b>	7.6 %
· <b>Other information</b>	No further relevant information available.

**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

**11 Toxicological information**

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:**  
Strong caustic effect.  
Strong irritant with the danger of severe eye injury.
- **Sensitization:**  
Sensitization possible through inhalation.  
Sensitization possible through skin contact.
- **Additional toxicological information:**  
The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:  
Toxic  
Harmful  
Irritant  
The product can cause inheritable damage.
- **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

7778-50-9 | potassium dichromate

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**· NTP (National Toxicology Program)**

7778-50-9 | potassium dichromate

K

**· OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

**· Target organs:**

Skin.

Eye.

Respiratory tract.

**12 Ecological information**

**· Toxicity**

**· Aquatic toxicity:** No further relevant information available.

**· Persistence and degradability** No further relevant information available.

**· Behavior in environmental systems:**

**· Bioaccumulative potential** No further relevant information available.

**· Mobility in soil** No further relevant information available.

**· Ecotoxicological effects:**

**· Remark:** Toxic for fish

**· Additional ecological information:**

**· General notes:**

Water danger class 3 (Internal calculation) (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 bodies of water or drainage ditch undiluted or unneutralized.

Danger to drinking water if even extremely small quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

**· Results of PBT and vPvB assessment**

**· PBT:** Not applicable.

**· vPvB:** Not applicable.

**· Other adverse effects** No further relevant information available.

**13 Disposal considerations**

**· Waste treatment methods**

**· Recommendation**

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

Dispose of waste in accordance to applicable national, regional, or local regulations.

**· Uncleaned packagings:**

**· Recommendation:** Disposal must be made according to official regulations.

**· Recommended cleansing agent:** Water, if necessary with cleansing agents.

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**14 Transport information**

· UN-Number · DOT, ADR, IMDG, IATA	UN3289
· UN proper shipping name · DOT, IATA · ADR · IMDG	TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (potassium dichromate, nitric acid) 3289 TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (potassium dichromate, NITRIC ACID) TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (potassium dichromate, NITRIC ACID)
· Transport hazard class(es) · DOT · Class · Label	6.1 Toxic substances 6.1, 8
· ADR · Class · Label	6.1 Toxic substances 6.1+8
· IMDG · Class · Label	6.1 Toxic substances 6.1/8
· IATA · Class · Label	6.1 Toxic substances 6.1 (8)
· Packing group · DOT, ADR, IMDG, IATA	II
· Environmental hazards: · Marine pollutant: · Special marking (ADR):	Yes Symbol (fish and tree) Symbol (fish and tree)
· Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups · Stowage Category · Stowage Code	Warning: Toxic substances 68 F-A,S-B Acids B SW2 Clear of living quarters.
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information: · DOT · Quantity limitations · Remarks:	Void Void Special marking with the symbol (fish and tree).

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· <b>ADR</b> · <b>Excepted quantities (EQ)</b>	Code: E4 Maximum net quantity per inner packaging: 1 ml Maximum net quantity per outer packaging: 500 ml
· <b>IMDG</b> · <b>Limited quantities (LQ)</b> · <b>Excepted quantities (EQ)</b>	100 ml Code: E4 Maximum net quantity per inner packaging: 1 ml Maximum net quantity per outer packaging: 500 ml
· <b>UN "Model Regulation":</b>	UN 3289 TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (POTASSIUM DICHROMATE, NITRIC ACID), 6.1 (8), II, ENVIRONMENTALLY HAZARDOUS

**15 Regulatory information**

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- SARA (Superfund Amendments and Reauthorization Act of 1986 - USA)

· **Section 313 (40CFR372.65):**

7778-50-9 potassium dichromate

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **California Proposition 65:**

None of the ingredients is listed.

· **Chemicals known to cause cancer:**

7778-50-9 potassium dichromate \*

· **Developmental Toxicity**

7778-50-9 potassium dichromate \* 7.6000%

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

7778-50-9 potassium dichromate A(inh), D(oral), K/L(inh), CBD(oral)

· **TLV (Threshold Limit Value established by ACGIH)**

7778-50-9 potassium dichromate A1

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

7778-50-9 potassium dichromate

· **National regulations**

- **Additional classification according to Decree on Hazardous Materials, Annexe 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.

- **Water hazard class:** Water danger class 3 (Self-assessment): extremely hazardous for water.

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· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 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:** Environmental Health and Safety.

· **Contact:**

Life Science Group, Environmental Health and Safety, 2000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 741-1000

Diagnostic Group, Environmental Health and Safety, 4000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 724-7000

· **Date of preparation / last revision** 11/14/2018 / -

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

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)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

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. 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. 1A: Reproductive toxicity – Category 1A

Repr. 1B: Reproductive toxicity – Category 1B

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

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

Aquatic Acute 2: Hazardous to the aquatic environment - acute aquatic hazard – Category 2

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

Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

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