1 Identification

- **Product identifier**
  - **Trade name:** Silver Stain Developer
  - **Catalog or product number:** 1610447, 1610450, 9701840, 1610447EDU, 1610446
  - **Relevant identified uses of the substance or mixture and uses advised against**
    No further relevant information available.
  - **Application of the substance / the preparation** 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:** Technical services, customer support
    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**
  - H302 Harmful if swallowed.
  - H319 Causes serious eye irritation.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**
  - Irritant to eyes.
  - Xi; Irritant
  - R36: Irritating to eyes.

- **Information concerning particular hazards for human and environment:**
  - The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- **Classification system:**
  - The classification was made according to the latest editions of the EU-lists, and expanded upon from company and literature data.
  - The classification was made according to OSHA 29CFR 1910.1200 and 1910.1030, and is expanded upon from company and/or literature information.

- **Label elements**
  - **Labelling according to EU guidelines:**
    The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials

- **Code letter and hazard designation of product:**
  - Xi Irritant

- **Risk phrases:**
  - 36 Irritating to eyes.

(Contd. on page 2)
Trade name: Silver Stain Developer

- Safety phrases:
  22 Do not breathe dust.
  26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
  60 This material and its container must be disposed of as hazardous waste.

- Other hazards
  Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Substances
  - CAS No. Description:
    497-19-8 sodium carbonate
  - Identification number(s):
    - EC number: 207-838-8
    - Index number: 011-005-00-2

- Chemical characterization: Mixtures
  - Description: Mixture of the substances listed below with non-hazardous additions.

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
<th>R phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>497-19-8 sodium carbonate</td>
<td>Xi R36 50-100%</td>
<td></td>
</tr>
<tr>
<td>30525-89-4 paraformaldehyde</td>
<td>T R23/24/25 C R34 Xn R40 Xi R43 0.1-1.0%</td>
<td></td>
</tr>
</tbody>
</table>

- Additional information For the wording of the listed risk phrases refer to section 15.

4 First-aid measures

- Description of first aid measures
  - 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. If symptoms persist, consult a doctor.
  - After swallowing Induce vomiting and call for medical help.
  - Information for doctor
  - Most important symptoms and effects, both acute and delayed No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Special hazards arising from the substance or mixture No further relevant information available.
Trade name: Silver Stain Developer

- Advice for firefighters
- Protective equipment: Wear self-contained respirator protective device.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Wear protective clothing.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up: Pick up mechanically.
- 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.

7 Handling and storage

- Handling
- Precautions for safe handling
  
  No special measures required.
  Prevent formation of dust.

- Information about protection against explosions and fires: No special measures required.

- 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 product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- 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.
  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.
- 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

(Contd. on page 4)
**9 Physical and chemical properties**

- **Form:** Solid
- **Color:** White
- **Odor:** Odorless
- **Odour threshold:** Not determined.

- **pH-value:** Not applicable.

- **Melting point/Melting range:** 854 °C
- **Boiling point/Boiling range:** Undetermined

- **Flash point:** Not applicable

- **Flammability (solid, gaseous):** Not determined.

- **Decomposition temperature:** Not determined.

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

- **Danger of explosion:** Product does not present an explosion hazard.

- **Explosion limits:**
  - **Lower:** Not determined.
  - **Upper:** Not determined.

- **Vapor pressure:** Not applicable.

- **Density at 20 °C:** 2.533 g/cm³

- **Bulk density at 20 °C:** 500-600 kg/m³

- **Relative density:** Not determined.

- **Vapour density:** Not applicable.

- **Evaporation rate:** Not applicable.

- **Solubility in / Miscibility with Water at 20 °C:** 212 g/l, Fully miscible

- **Partition coefficient (n-octanol/water):** Not determined.

- **Viscosity:**
  - **dynamic:** Not applicable.
  - **kinematic:** Not applicable.
Material Safety Data Sheet

Trade name: Silver Stain Developer

<table>
<thead>
<tr>
<th>Solvent content:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic solvents:</td>
</tr>
<tr>
<td>0.0 %</td>
</tr>
</tbody>
</table>

Solids content: 100.0 %
Other information
No further relevant information available.

10 Stability and reactivity

- Reactivity
- 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:
  - LD/LC50 values for hazardous components per OSHA criteria:
    - 497-19-8 sodium carbonate
      - Oral LD50 4000 mg/kg (rat)

  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritant effect.
    - Sensitization: No sensitizing effects known.

  - 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:
    Irritant

- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
  - NTP (National Toxicology Program)
    None of the ingredients is listed.
  - Target organs: Eye.

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.

(Contd. on page 6)
13 Disposal considerations

- Waste treatment methods
  - Recommendation
  Hand over to hazardous waste disposers.
  Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADR, ADN, IMDG, IATA Void
- UN proper shipping name
  - DOT, ADR, ADN, IMDG, IATA Void
- Transport hazard class(es)
  - DOT, ADR, ADN, IMDG, IATA Void
  - Class Void
- Packing group
  - DOT, ADR, IMDG, IATA Void
- Environmental hazards:
  - Marine pollutant: No
- Special precautions for user
  - Not applicable.
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.
- UN "Model Regulation": -

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 302/304 (40CFR355.30 / 40CFR355.40):
    None of the ingredients is listed.

(Contd. of page 5)

(Contd. on page 7)
Trade name: Silver Stain Developer

- **Section 313 (40CFR372.65):**
  None of the ingredients is listed.

- **TSCA (Toxic Substances Control Act):**
  All ingredients are listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    None of the ingredients is listed.
  - **MAK (German Maximum Workplace Concentration)**
    None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients is listed.
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    None of the ingredients is listed.

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

- **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)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent

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