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

Date of issue: 04/15/2025 Revision date 04/15/2025

## 1 Identification

· **Product identifier**

· **Trade name: Staining Solution A (5X)**
· **Other means of identification**

· **Article number:** 401016
· **Application of the substance / the mixture**
This product is for research use - Not for human or veterinary diagnostic or therapeutic use.

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Cayman Chemical Co.
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
USA

· **Information department:** Product safety department
· **Emergency telephone number:**
During normal opening times: +1 (734) 971-3335
US/CANADA: 800-424-9300
Outside US/CANADA: 703-741-5970

## 2 Hazard(s) identification

· **Classification of the substance or mixture**


GHS08 Health hazard

Specific target organ toxicity (repeated exposure) 2 H373 May cause damage to organs through prolonged or repeated exposure.


GHS07

Skin irritation 2 H315 Causes skin irritation.
Eye irritation 2A H319 Causes serious eye irritation.
Specific target organ toxicity (single exposure) 3 H335 May cause respiratory irritation.

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

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· **Hazard pictograms**



GHS07 GHS08

· **Signal word** Warning

· **Hazard-determining components of labeling:**
Sodium phosphate, Dibasic, heptahydrate
Sodium chloride
citric acid

· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

| | |
|---|---|
| P260 | Do not breathe dust/fume/gas/mist/vapors/spray. |
| P264 | Wash thoroughly after handling. |
| P271 | Use only outdoors or in a well-ventilated area. |
| P280 | Wear protective gloves / eye protection / face protection. |
| P302+P352 | If on skin: Wash with plenty of water. |
| 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. |
| P312 | Call a poison center/doctor if you feel unwell. |
| P321 | Specific treatment (see on this label). |
| P314 | Get medical advice/attention if you feel unwell. |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |
| P332+P313 | If skin irritation occurs: Get medical advice/attention. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P403+P233 | Store in a well-ventilated place. Keep container tightly closed. |
| P405 | Store locked up. |
| P501 | Dispose of contents/container in accordance with local/regional/national/international regulations. |

· **Information pertaining to particular dangers for man and environment:**
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**




Health = 2
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**




Health = 2
Fire = 0
Reactivity = 0

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

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· **Classification according to (d)(1)(ii) of § 1910.1200**
The SDS issuer does not object to the classifications provided by importers or manufacturers of precursor products.
· **Hazards not otherwise classified**
There are no adverse physical or health effects known that are not covered by the hazard classes of the Hazard Communications Standard.

## 3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

| · **Dangerous components:** | |
|---|---|
| Sodium phosphate, Dibasic, heptahydrate | >10–<20% |
| Sodium chloride | >2.5–<10% |
| citric acid | >2.5–<10% |

| · **Other ingredients** | |
|---|---|
| Water | >50–≤100% |
| Magnesium chloride, hexahydrate | ≤2.5% |

· **Additional information:**
The specific chemical identity of composition and exact percentage is being withheld as a trade secret. The specific chemical identity and exact percentage is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of paragraph §1910.1200.

## 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.
· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:** If symptoms persist consult 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:**
Use fire fighting measures that suit the environment.
A solid water stream may be inefficient.
· **Special hazards arising from the substance or mixture**
67-56-1During heating or in case of fire poisonous gases are produced.

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· **Advice for firefighters**
· **Protective equipment:** Mouth respiratory protective device.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
· **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
· **Protective Action Criteria for Chemicals**

| · **PAC-1:** | |
|---|---|
| Magnesium chloride, hexahydrate | 34 mg/m³ |
| · **PAC-2:** | |
| Magnesium chloride, hexahydrate | 370 mg/m³ |
| · **PAC-3:** | |
| Magnesium chloride, hexahydrate | 1,600 mg/m³ |

· **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

· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:** Store in accordance with information listed on the product insert.
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

· **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**
· **Appropriate engineering controls** No further data; see section 7.

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· **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.
Store protective clothing separately.
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

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Physical state** | Liquid |
| · **Color:** | According to product specification |
| · **Odor:** | Characteristic |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | |
| · **Melting point/Melting range:** | Undetermined. |
| · **Boiling point/Boiling range:** | 100 °C (212 °F) |
| · **Flammability:** | Not applicable. |
| · **Explosion limits:** | |
| · **Lower:** | Not determined. |
| · **Upper:** | Not determined. |
| · **Flash point:** | Not applicable. |

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| | |
|---|---|
| · **Decomposition temperature:** | Not determined. |
| · **pH-value at 20 °C (68 °F):** | 5.35 |
| · **Viscosity:** | |
| · **Kinematic:** | Not determined. |
| · **SOLUBILITY** | |
| · **Dynamic:** | Not determined. |
| · **Solubility in / Miscibility with** | |
| · **Water:** | Fully miscible. |
| · **Partition coefficient (n-octanol/water):** | Not determined. |
| · **Vapor pressure at 20 °C (68 °F):** | 23 hPa (17.3 mm Hg) |
| · **Vapor pressure:** | |
| · **Density:** | Not determined. |
| · **Relative density** | Not determined. |
| · **Vapor density** | Not determined. |
| · **Particle characteristics** | Not applicable. |
| · **Other information** | |
| · **Appearance:** | |
| · **Form:** | Liquid |
| · **Important information on protection of health and environment, and on safety.** | |
| · **Ignition temperature:** | Product is not selfigniting. |
| · **Danger of explosion:** | Product does not present an explosion hazard. |
| · **Solvent content:** | |
| · **Water:** | 75.2 % |
| · **VOC content:** | 0.00 %<br>0.0 g/l / 0.00 lb/gal |
| · **Solids content:** | 24.8 % |
| · **Change in condition** | |
| · **Evaporation rate** | Not determined. |

## 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:**

| · **LD/LC50 values that are relevant for classification:** | | |
|---|---|---|
| **Sodium chloride** | | |
| Oral | LDLO | 1,000 mg/kg (man) |
| | TDLO | 650 ml/kg (man) |

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| | | |
|---|---|---|
| | LD50 | 4,000 mg/kg (mouse) |
| | | 3,000 mg/kg (rat) |
| | LD50 | 4 g/kg (mouse) |
| Inhalative | LC50 | 320 mg/m³ (mouse) |
| | TCLO | 0.63 mg/m³ (human) |
| | LCLO | 29,300 mg/m³/7h (mouse) |
| Irritation of skin | Irritation | 500 mg/24h (rabbit)<br>mild |
| Irritation of eyes | Irritation | 100 mg/24h (rabbit)<br>moderate |
| | Intraperitoneal LD50 | 2,602 mg/kg (mouse) |
| | Subcutaneous LD50 | 31.6 mg/kg (rat) |
| | Intravenous LD50 | 59.5 mg/kg (rat) |
| | Data | 15 mg/3D (human)<br>mild |
| | Subcutaneous LD50 | 3 g/kg (mouse) |
| **citric acid** | | |
| Oral | LD50 | 5,040 mg/kg (mouse) |

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant
· **Interactive effects** No interactive effects between components are known.

· **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. |

| · **OSHA-Ca (Occupational Safety & Health Administration)** |
|---|
| None of the ingredients is listed. |

· **Alternative sources for toxicological information**
No non-standard sources for toxicological information where used.

## 12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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· **Other adverse effects**
· **Additional ecological information:**
· **General notes:**
Water hazard class 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

## 13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
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.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14 Transport information

| | |
|---|---|
| · **UN-Number**<br>· **DOT, IMDG, IATA** | not regulated |
| · **UN proper shipping name**<br>· **DOT, IMDG, IATA** | not regulated |
| · **Transport hazard class(es)**<br>· **DOT, ADN, IMDG, IATA**<br>· **Class** | not regulated |
| · **Packing group**<br>· **DOT, IMDG, IATA** | not regulated |
| · **Environmental hazards:** | Not applicable. |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Special precautions for user** | Not applicable. |
| · **UN "Model Regulation":** | not regulated |

## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.
· **Sara**

| · **Section 355 (extremely hazardous substances):** |
|---|
| None of the ingredients is listed. |

| · **Section 313 (Specific toxic chemical listings):** |
|---|
| None of the ingredients is listed. |

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

| | |
|---|---|
| Water | ACTIVE |
| Sodium chloride | ACTIVE |
| citric acid | ACTIVE |

· **Hazardous Air Pollutants**
None of the ingredients is listed.

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

· **TLV (Threshold Limit Value)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

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

## 16 Other information

All chemicals may pose unknown hazards and should be used with caution. This SDS applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. Cayman Chemical Company assumes no responsibility for incidental or consequential damages, including lost profits, arising from the use of these data. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Cayman Chemical Company assumes no responsibility for the completeness or accuracy of the information contained herein.

· **Department issuing SDS:** Environment protection department.
· **Contact:** -
· **Date of preparation** 04/15/2025
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative

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NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Skin irritation 2: Skin corrosion/irritation – Category 2
Eye irritation 2A: Serious eye damage/eye irritation – Category 2A
Specific target organ toxicity (single exposure) 3: Specific target organ toxicity (single exposure) – Category 3
Specific target organ toxicity (repeated exposure) 2: Specific target organ toxicity (repeated exposure) – Category 2