# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

## 1 Identification

· **Product identifier**

· **Trade name: MPO Chlorination Substrate**
· **Other means of identification**

· **Article number:** 400788
· **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**


GHS02 Flame

Flammable liquids 3 H226 Flammable liquid and vapor.


GHS08 Health hazard

Reproductive toxicity 1B H360 May damage fertility or the unborn child.


GHS07

Acute toxicity - dermal 4 H312 Harmful in contact with skin.
Acute toxicity - inhalation 4 H332 Harmful if inhaled.
Eye irritation 2A H319 Causes serious eye irritation.

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

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 1)

· **Hazard pictograms**

GHS02 GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
N,N-Dimethylformamide

· **Hazard statements**

| | |
|---|---|
| H226 | Flammable liquid and vapor. |
| H312+H332 | Harmful in contact with skin or if inhaled. |
| H319 | Causes serious eye irritation. |
| H360 | May damage fertility or the unborn child. |

· **Precautionary statements**

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground / bond container and receiving equipment. |
| P241 | Use explosion-proof [electrical/ventilating/lighting] equipment. |
| P242 | Use non-sparking tools. |
| P243 | Take action to prevent static discharge. |
| P261 | Avoid breathing 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/protective clothing/eye protection/face protection/hearing 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. |
| P308+P313 | IF exposed or concerned: Get medical advice/attention. |
| P312 | Call a poison center/doctor if you feel unwell. |
| P321 | Specific treatment (see on this label). |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P370+P378 | In case of fire: Use CO2, powder or water spray to extinguish. |
| P403+P235 | Store in a well-ventilated place. Keep cool. |
| 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 = 2
Reactivity = 0

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 2)

· **HMIS-ratings (scale 0 - 4)**

| | |
|---|---|
| HEALTH | *2 |
| FIRE | 2 |
| REACTIVITY | 0 |

Health = *2
Fire = 2
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Classification according to (d)(1)(ii) of § 1910.12000**
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:**

| | | |
|---|---|---|
| CAS: 68-12-2<br>RTECS: LQ2100000 | N,N-Dimethylformamide | 99.8941% |

· **Other ingredients**

| | | |
|---|---|---|
| 359010-70-1 | APF | 0.1059% |

## 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:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately rinse with water.
· **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.



(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 3)

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

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **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:** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 2 ppm |

| · **PAC-2:** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 91 ppm |

| · **PAC-3:** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 530 ppm |

· **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.
Open and handle receptacle with care.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
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.

(Contd. on page 5)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 4)

· **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:** | |
|---|---|
| **68-12-2 N,N-Dimethylformamide** | |
| PEL | Long-term value: 30 mg/m³, 10 ppm<br>Skin |
| REL | Long-term value: 30 mg/m³, 10 ppm<br>Skin |
| TLV | Long-term value: 5 ppm<br>Skin; BEI, A3 |

| · **Ingredients with biological limit values:** | |
|---|---|
| **68-12-2 N,N-Dimethylformamide** | |
| BEI | 30 mg/L<br>Medium: urine<br>Time: end of shift<br>Parameter: Total N-Methylformamide (sum of N-Methylformamide and N-(Hydroxymethyl)-N-Methylformamide<br><br>30 mg/L<br>Medium: urine<br>Time: end of shift at end of workweek<br>Parameter: N-Acetyl-S-(N-methylcarbamoyl) cysteine |

· **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.
· **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.
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

(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 5)

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** | Fluid |
| · **Color:** | According to product specification |
| · **Odor:** | Characteristic |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | |
| · **Melting point/Melting range:** | -61 °C (-77.8 °F) |
| · **Boiling point/Boiling range:** | 152.5–153.5 °C (306.5–308.3 °F) |
| · **Flammability:** | Flammable. |
| · **Explosion limits:** | |
| · **Lower:** | 2.2 Vol % |
| · **Upper:** | 16 Vol % |
| · **Flash point:** | 58 °C (136.4 °F) |
| · **Auto igniting:** | 440 °C (824 °F) |
| · **Decomposition temperature:** | Not determined. |
| · **pH-value at 20 °C (68 °F):** | 7 |
| · **Viscosity:** | |
| · **Kinematic:** | Not determined. |
| · **SOLUBILITY** | |
| · **Dynamic at 20 °C (68 °F):** | 0.802 mPas |
| · **Solubility in / Miscibility with** | |
| · **Water:** | Fully miscible. |
| · **Partition coefficient (n-octanol/water):** | Not determined. |
| · **Vapor pressure at 20 °C (68 °F):** | 3.5 hPa (2.6 mm Hg) |
| · **Vapor pressure:** | |
| · **Density at 20 °C (68 °F):** | 0.95 g/cm³ (7.92775 lbs/gal) |
| · **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. |

(Contd. on page 7)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 6)

| | |
|---|---|
| · **Danger of explosion:** | Not determined. |
| · **Solvent content:** | |
| · **VOC content:** | 0.00 %<br>0.0 g/l / 0.00 lb/gal |
| · **Solids content:** | 0.0 % |
| · **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:** | | |
|---|---|---|
| **ATE (Acute Toxicity Estimate)** | | |
| Dermal | LD50 | 1,101 mg/kg |
| Inhalative | LC50/4 h | 11 mg/l |

| **68-12-2 N,N-Dimethylformamide** | | |
|---|---|---|
| Oral | LD50 | 2,900 mg/kg (mouse) |
| | | 2,800 mg/kg (rat) |
| Dermal | LD50 | >3,200 mg/kg (rat) |
| | | 4,720 mg/kg (rabbit) |
| Inhalative | LC50/4 h | 9,400 mg/l (mouse) |
| | Intraperitoneal LD50 | 1,400 mg/kg (rat) |
| | Subcutaneous LD50 | 3,800 mg/kg (rat) |

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **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:
Harmful
Irritant
· **Interactive effects** No interactive effects between components are known.

(Contd. on page 8)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 7)

· **Carcinogenic categories**

| · **IARC (International Agency for Research on Cancer)** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 2A |

| · **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.
· **Other adverse effects**
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

## 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** | |
|---|---|
| · **DOT, IMDG, IATA** | UN2265 |
| · **UN proper shipping name** | |
| · **DOT, IATA** | N,N-Dimethylformamide solution |
| · **IMDG** | N,N-DIMETHYLFORMAMIDE solution |

(Contd. on page 9)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 8)

· **Transport hazard class(es)**

· **DOT**


| | |
|---|---|
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |

· **IMDG, IATA**


| | |
|---|---|
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |
| · **Packing group** | |
| · **DOT, IMDG, IATA** | III |
| · **Environmental hazards:** | Not applicable. |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | |
| · **DOT** | |
| · **Quantity limitations** | On passenger aircraft/rail: 60 L<br>On cargo aircraft only: 220 L |
| · **IMDG** | |
| · **Limited quantities (LQ)** | 5L |
| · **Excepted quantities (EQ)** | Code: E1<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 1000 ml |
| · **IATA** | |
| · **Remarks:** | When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.<br>Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity. |
| · **Special precautions for user** | Warning: Flammable liquids |
| · **Hazard identification number (Kemler code):** | 30 |
| · **EMS Number:** | F-E,S-D |
| · **Stowage Category** | A |
| · **UN "Model Regulation":** | UN 2265 N,N-DIMETHYLFORMAMIDE SOLUTION, 3, III |



(Contd. on page 10)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 9)

## 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):**

| | |
|---|---|
| 68-12-2 | N,N-Dimethylformamide |

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

| | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | ACTIVE |

· **Hazardous Air Pollutants**

| | |
|---|---|
| 68-12-2 | N,N-Dimethylformamide |

· **Chemicals known to cause cancer:**

| | |
|---|---|
| 68-12-2 | N,N-Dimethylformamide |

· **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)**

| | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | A4 |

· **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 previous version** 08/13/2024
· **Date of preparation** 11/19/2024
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation

(Contd. on page 11)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Chlorination Substrate**

(Contd. from page 10)

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
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flammable liquids 3: Flammable liquids – Category 3
Acute toxicity - dermal 4: Acute toxicity – Category 4
Eye irritation 2A: Serious eye damage/eye irritation – Category 2A
Reproductive toxicity 1B: Reproductive toxicity – Category 1B

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

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

Date of issue: 11/19/2024 Revision date 11/19/2024

## 1 Identification

· **Product identifier**

· **Trade name: MPO Inhibitor**
· **Other means of identification**

· **Article number:** 400810
· **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**


GHS02 Flame

Flammable liquids 3 H226 Flammable liquid and vapor.


GHS08 Health hazard

Reproductive toxicity 1B H360 May damage fertility or the unborn child.


GHS07

Acute toxicity - dermal 4 H312 Harmful in contact with skin.
Acute toxicity - inhalation 4 H332 Harmful if inhaled.
Eye irritation 2A H319 Causes serious eye irritation.

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

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 1)

· **Hazard pictograms**

GHS02 GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
N,N-Dimethylformamide

· **Hazard statements**

| | |
|---|---|
| H226 | Flammable liquid and vapor. |
| H312+H332 | Harmful in contact with skin or if inhaled. |
| H319 | Causes serious eye irritation. |
| H360 | May damage fertility or the unborn child. |

· **Precautionary statements**

| | |
|---|---|
| P201 | Obtain special instructions before use. |
| P202 | Do not handle until all safety precautions have been read and understood. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground / bond container and receiving equipment. |
| P241 | Use explosion-proof [electrical/ventilating/lighting] equipment. |
| P242 | Use non-sparking tools. |
| P243 | Take action to prevent static discharge. |
| P261 | Avoid breathing 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/protective clothing/eye protection/face protection/hearing 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. |
| P308+P313 | IF exposed or concerned: Get medical advice/attention. |
| P312 | Call a poison center/doctor if you feel unwell. |
| P321 | Specific treatment (see on this label). |
| P362+P364 | Take off contaminated clothing and wash it before reuse. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P370+P378 | In case of fire: Use CO2, powder or water spray to extinguish. |
| P403+P235 | Store in a well-ventilated place. Keep cool. |
| 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 = 2
Reactivity = 0

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 2)

· **HMIS-ratings (scale 0 - 4)**


Health = *2
Fire = 2
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Classification according to (d)(1)(ii) of § 1910.12000**
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:**

| | | |
|---|---|---|
| CAS: 68-12-2<br>RTECS: LQ2100000 | N,N-Dimethylformamide | 99.244% |

· **Other ingredients**

| | | |
|---|---|---|
| CAS: 5351-17-7<br>RTECS: DG2580000 | 4-Aminobenzoic Acid hydrazide | 0.756% |

## 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:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately rinse with water.
· **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.



(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 3)

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

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **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:** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 2 ppm |

| · **PAC-2:** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 91 ppm |

| · **PAC-3:** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 530 ppm |

· **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.
Open and handle receptacle with care.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
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.

(Contd. on page 5)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 4)

· **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:** | |
|---|---|
| **68-12-2 N,N-Dimethylformamide** | |
| PEL | Long-term value: 30 mg/m³, 10 ppm<br>Skin |
| REL | Long-term value: 30 mg/m³, 10 ppm<br>Skin |
| TLV | Long-term value: 5 ppm<br>Skin; BEI, A3 |

| · **Ingredients with biological limit values:** | |
|---|---|
| **68-12-2 N,N-Dimethylformamide** | |
| BEI | 30 mg/L<br>Medium: urine<br>Time: end of shift<br>Parameter: Total N-Methylformamide (sum of N-Methylformamide and N-(Hydroxymethyl)-N-Methylformamide<br><br>30 mg/L<br>Medium: urine<br>Time: end of shift at end of workweek<br>Parameter: N-Acetyl-S-(N-methylcarbamoyl) cysteine |

· **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.
· **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.
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

(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 5)

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** | Fluid |
| · **Color:** | According to product specification |
| · **Odor:** | Characteristic |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | |
| · **Melting point/Melting range:** | -61 °C (-77.8 °F) |
| · **Boiling point/Boiling range:** | 152.5–153.5 °C (306.5–308.3 °F) |
| · **Flammability:** | Flammable. |
| · **Explosion limits:** | |
| · **Lower:** | 2.2 Vol % |
| · **Upper:** | 16 Vol % |
| · **Flash point:** | 58 °C (136.4 °F) |
| · **Auto igniting:** | 440 °C (824 °F) |
| · **Decomposition temperature:** | Not determined. |
| · **pH-value at 20 °C (68 °F):** | 7 |
| · **Viscosity:** | |
| · **Kinematic:** | Not determined. |
| · **SOLUBILITY** | |
| · **Dynamic at 20 °C (68 °F):** | 0.802 mPas |
| · **Solubility in / Miscibility with** | |
| · **Water:** | Fully miscible. |
| · **Partition coefficient (n-octanol/water):** | Not determined. |
| · **Vapor pressure at 20 °C (68 °F):** | 3.5 hPa (2.6 mm Hg) |
| · **Vapor pressure:** | |
| · **Density at 20 °C (68 °F):** | 0.95 g/cm³ (7.92775 lbs/gal) |
| · **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. |

(Contd. on page 7)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 6)

| | |
|---|---|
| · **Danger of explosion:** | Not determined. |
| · **Solvent content:** | |
| · **VOC content:** | 0.00 %<br>0.0 g/l / 0.00 lb/gal |
| · **Solids content:** | 0.8 % |
| · **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:** | | |
|---|---|---|
| **ATE (Acute Toxicity Estimate)** | | |
| Dermal | LD50 | 1,108 mg/kg |
| Inhalative | LC50/4 h | 11.1 mg/l |

| **68-12-2 N,N-Dimethylformamide** | | |
|---|---|---|
| Oral | LD50 | 2,900 mg/kg (mouse) |
| | | 2,800 mg/kg (rat) |
| Dermal | LD50 | >3,200 mg/kg (rat) |
| | | 4,720 mg/kg (rabbit) |
| Inhalative | LC50/4 h | 9,400 mg/l (mouse) |
| | Intraperitoneal LD50 | 1,400 mg/kg (rat) |
| | Subcutaneous LD50 | 3,800 mg/kg (rat) |

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **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:
Harmful
Irritant
· **Interactive effects** No interactive effects between components are known.

(Contd. on page 8)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 7)

· **Carcinogenic categories**

| · **IARC (International Agency for Research on Cancer)** | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | 2A |

| · **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.
· **Other adverse effects**
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

## 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** | |
|---|---|
| · **DOT, IMDG, IATA** | UN2265 |
| · **UN proper shipping name** | |
| · **DOT, IATA** | N,N-Dimethylformamide solution |
| · **IMDG** | N,N-DIMETHYLFORMAMIDE solution |

(Contd. on page 9)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 8)

· **Transport hazard class(es)**

· **DOT**


| | |
|---|---|
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |

· **IMDG, IATA**


| | |
|---|---|
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |
| · **Packing group** | |
| · **DOT, IMDG, IATA** | III |
| · **Environmental hazards:** | Not applicable. |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | |
| · **DOT** | |
| · **Quantity limitations** | On passenger aircraft/rail: 60 L<br>On cargo aircraft only: 220 L |
| · **IMDG** | |
| · **Limited quantities (LQ)** | 5L |
| · **Excepted quantities (EQ)** | Code: E1<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 1000 ml |
| · **IATA** | |
| · **Remarks:** | When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.<br>Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity. |
| · **Special precautions for user** | Warning: Flammable liquids |
| · **Hazard identification number (Kemler code):** | 30 |
| · **EMS Number:** | F-E,S-D |
| · **Stowage Category** | A |
| · **UN "Model Regulation":** | UN 2265 N,N-DIMETHYLFORMAMIDE SOLUTION, 3, III |



(Contd. on page 10)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 9)

## 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):**

| | |
|---|---|
| 68-12-2 | N,N-Dimethylformamide |

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

| | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | ACTIVE |

· **Hazardous Air Pollutants**

| | |
|---|---|
| 68-12-2 | N,N-Dimethylformamide |

· **Chemicals known to cause cancer:**

| | |
|---|---|
| 68-12-2 | N,N-Dimethylformamide |

· **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)**

| | | |
|---|---|---|
| 68-12-2 | N,N-Dimethylformamide | A4 |

· **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** 11/19/2024
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association

(Contd. on page 11)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Inhibitor**

(Contd. from page 10)

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
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flammable liquids 3: Flammable liquids – Category 3
Acute toxicity - dermal 4: Acute toxicity – Category 4
Eye irritation 2A: Serious eye damage/eye irritation – Category 2A
Reproductive toxicity 1B: Reproductive toxicity – Category 1B

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

## 1 Identification

· **Product identifier**

· **Trade name: MPO Assay Buffer**
· **Other means of identification**

· **Article number:** 700164
· **Application of the substance / the mixture**
This product is for research use - Not for human or veterinary diagnostic or therapeutic use.

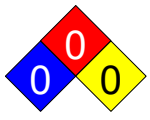
· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Cayman Chemical Co.
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
USA

· **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**
The product is not classified, according to the Globally Harmonized System (GHS).

· **Label elements**
· **GHS label elements** None
· **Hazard pictograms** None
· **Signal word** None
· **Hazard statements** None
· **Information pertaining to particular dangers for man and environment:**
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**




Health = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**


Health = 0
Fire = 0
Reactivity = 0

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 1)

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Classification according to (d)(1)(ii) of § 1910.12000**
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:** None

| · **Other ingredients** | | |
|---|---|---|
| CAS: 7732-18-5<br>RTECS: ZC0110000 | Water | 98.728% |
| CAS: 7647-14-5<br>RTECS: VZ4725000 | Sodium chloride | 0.9% |
| CAS: 7778-77-0<br>RTECS: TC6615500 | Potassium phosphate, Monobasic | 0.272% |
| CAS: 492-62-6<br>RTECS: LZ6600000 | β-D-Glucose | 0.1% |

## 4 First-aid measures

· **Description of first aid measures**
· **General information:** No special measures required.
· **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.
· **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** No further relevant information available.

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 2)

· **Advice for firefighters**
· **Protective equipment:** No special measures required.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** Dilute with plenty of water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **Protective Action Criteria for Chemicals**

| · **PAC-1:** | | |
|---|---|---|
| 7778-77-0 | Potassium phosphate, Monobasic | 9.6 mg/m³ |
| · **PAC-2:** | | |
| 7778-77-0 | Potassium phosphate, Monobasic | 110 mg/m³ |
| · **PAC-3:** | | |
| 7778-77-0 | Potassium phosphate, Monobasic | 630 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** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **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:** None.
· **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.
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
· **Breathing equipment:** Not required.
· **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 3)

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:** Goggles recommended during refilling.

* 
## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Physical state** | Fluid |
| · **Color:** | According to product specification |
| · **Odor:** | Odorless |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | 50 ml of 1X Assay Buffer |
| · **Melting point/Melting range:** | 0 °C (32 °F) |
| · **Boiling point/Boiling range:** | 100 °C (212 °F) |
| · **Flammability:** | Not applicable. |
| · **Explosion limits:** | |
| · **Lower:** | Not determined. |
| · **Upper:** | Not determined. |
| · **Flash point:** | Not applicable. |
| · **Decomposition temperature:** | Not determined. |
| · **pH-value at 20 °C (68 °F):** | 7.4 |
| · **Viscosity:** | |
| · **Kinematic:** | Not determined. |
| · **SOLUBILITY** | |
| · **Dynamic at 20 °C (68 °F):** | 0.952 mPas |
| · **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 at 20 °C (68 °F):** | 1 g/cm³ (8.345 lbs/gal) |
| · **Relative density** | Not determined. |
| · **Vapor density** | Not determined. |
| · **Particle characteristics** | Not applicable. |

| | |
|---|---|
| · **Other information** | |
| · **Appearance:** | |
| · **Form:** | Liquid |

(Contd. on page 5)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 4)

| | |
|---|---|
| · **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:** | 98.7 % |
| · **VOC content:** | 0.00 %<br>0.0 g/l / 0.00 lb/gal |
| · **Solids content:** | 1.3 % |
| · **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:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
· **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.



(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 5)

## 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.
· **Other adverse effects**
· **Additional ecological information:**
· **General notes:** Not hazardous for water.

## 13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:** Smaller quantities can be disposed of with household waste.

· **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.

(Contd. on page 7)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 6)

· **Sara**

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

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

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

| | | |
|---|---|---|
| 7732-18-5 | Water | ACTIVE |
| 7647-14-5 | Sodium chloride | ACTIVE |
| 7778-77-0 | Potassium phosphate, Monobasic | 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 previous version** 02/24/2023
· **Date of preparation** 11/19/2024
· **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

(Contd. on page 8)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Assay Buffer**

(Contd. from page 7)

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)
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

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

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

Date of issue: 11/19/2024 Revision date 11/19/2024

## 1 Identification

· **Product identifier**

· **Trade name: Myeloperoxidase Assay Reagent**
· **Other means of identification**

· **Article number:** 700166
· **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

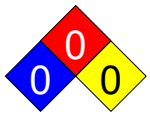
· **Information department:** Product safety department
· **Emergency telephone number:**
During normal opening times: +1 (734) 971-3335
US/CANADA: 800-424-9300
Outside US/CANADA: 703-741-5970

* 

## 2 Hazard(s) identification

· **Classification of the substance or mixture**
The product is not classified, according to the Globally Harmonized System (GHS).

· **Label elements**
· **GHS label elements** None
· **Hazard pictograms** None
· **Signal word** None
· **Hazard statements** None
· **Information pertaining to particular dangers for man and environment:**
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**




Health = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**


Health = 0
Fire = 0
Reactivity = 0

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 1)

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Classification according to (d)(1)(ii) of § 1910.12000**
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:** None

| · **Other ingredients** | | |
|---|---|---|
| CAS: 7732-18-5<br>RTECS: ZC0110000 | Water | 98.718% |
| CAS: 7647-14-5<br>RTECS: VZ4725000 | Sodium chloride | 0.9% |
| CAS: 7778-77-0<br>RTECS: TC6615500 | Potassium phosphate, Monobasic | 0.272% |
| CAS: 492-62-6<br>RTECS: LZ6600000 | β-D-Glucose | 0.1% |
| CAS: 9003-99-0 | Peroxidase | 0.01% |

## 4 First-aid measures

· **Description of first aid measures**
· **General information:** No special measures required.
· **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.
· **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** No further relevant information available.

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 2)

· **Advice for firefighters**
· **Protective equipment:** No special measures required.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Not required.
· **Environmental precautions:** Dilute with plenty of water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **Protective Action Criteria for Chemicals**

| · **PAC-1:** | | |
|---|---|---|
| 7778-77-0 | Potassium phosphate, Monobasic | 9.6 mg/m³ |
| · **PAC-2:** | | |
| 7778-77-0 | Potassium phosphate, Monobasic | 110 mg/m³ |
| · **PAC-3:** | | |
| 7778-77-0 | Potassium phosphate, Monobasic | 630 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** No special measures required.
· **Information about protection against explosions and fires:** No special measures required.

· **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:** None.
· **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.
· **Personal protective equipment:**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
· **Breathing equipment:** Not required.
· **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 3)

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:** Goggles recommended during refilling.

* 
## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Physical state** | Fluid |
| · **Color:** | According to product specification |
| · **Odor:** | Odorless |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | 50 µl of a 60 U/ml solution of polymorphonuclear leukocyte myeloperoxidase |
| · **Melting point/Melting range:** | 0 °C (32 °F) |
| · **Boiling point/Boiling range:** | 100 °C (212 °F) |
| · **Flammability:** | Not applicable. |
| · **Explosion limits:** | |
| · **Lower:** | Not determined. |
| · **Upper:** | Not determined. |
| · **Flash point:** | Not applicable. |
| · **Decomposition temperature:** | Not determined. |
| · **pH-value at 20 °C (68 °F):** | 7.4 |
| · **Viscosity:** | |
| · **Kinematic:** | Not determined. |
| · **SOLUBILITY** | |
| · **Dynamic at 20 °C (68 °F):** | 0.952 mPas |
| · **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 at 20 °C (68 °F):** | 1 g/cm³ (8.345 lbs/gal) |
| · **Relative density** | Not determined. |
| · **Vapor density** | Not determined. |
| · **Particle characteristics** | Not applicable. |
| · **Other information** | |
| · **Appearance:** | |
| · **Form:** | Liquid |

(Contd. on page 5)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 4)

| | |
|---|---|
| · **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:** | 98.7 % |
| · **VOC content:** | 0.00 %<br>0.0 g/l / 0.00 lb/gal |
| · **Solids content:** | 1.3 % |
| · **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:**
· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** No irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
· **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.



(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 5)

## 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.
· **Other adverse effects**
· **Additional ecological information:**
· **General notes:** Not hazardous for water.

## 13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:** Smaller quantities can be disposed of with household waste.

· **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.

(Contd. on page 7)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 6)

· **Sara**

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

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

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

| | | |
|---|---|---|
| 7732-18-5 | Water | ACTIVE |
| 7647-14-5 | Sodium chloride | ACTIVE |
| 7778-77-0 | Potassium phosphate, Monobasic | ACTIVE |
| 9003-99-0 | Peroxidase | 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 previous version** 02/24/2023
· **Date of preparation** 11/19/2024
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association

(Contd. on page 8)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Myeloperoxidase Assay Reagent**

(Contd. from page 7)

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)
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

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

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

## 1 Identification

· **Product identifier**

· **Trade name: MPO Hydrogen Peroxide**
· **Other means of identification**

· **Article number:** 700168
· **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**


GHS05 Corrosion

Eye damage 1 H318 Causes serious eye damage.


GHS07

Acute toxicity - oral 4 H302 Harmful if swallowed.

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



GHS05 GHS07

· **Signal word** Danger

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 1)

· **Hazard-determining components of labeling:**
Hydrogen peroxide
· **Hazard statements**
H302 Harmful if swallowed.
H318 Causes serious eye damage.
· **Precautionary statements**

| | |
|---|---|
| P264 | Wash thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P280 | Wear eye protection / face protection. |
| P301+P312 | If swallowed: Call a poison center/doctor if you feel unwell. |
| P330 | Rinse mouth. |
| 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. |
| 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 = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**


Health = 3
Fire = 0
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Classification according to (d)(1)(ii) of § 1910.12000**
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:**

| | | |
|---|---|---|
| CAS: 7722-84-1<br>RTECS: MX0887000 | Hydrogen peroxide | 30.0% |

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 2)

| · **Other ingredients** | | |
|---|---|---|
| CAS: 7732-18-5<br>RTECS: ZC0110000 | Water | 70.0% |

## 4 First-aid measures

· **Description of first aid measures**
· **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **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. Then consult a doctor.
· **After swallowing:** Immediately call a 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** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **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).
Use neutralizing agent.
Dispose contaminated material as waste according to section 13.
· **Protective Action Criteria for Chemicals**

| · **PAC-1:** | | |
|---|---|---|
| 7722-84-1 | Hydrogen peroxide | 10 ppm |

| · **PAC-2:** | | |
|---|---|---|
| 7722-84-1 | Hydrogen peroxide | 50 ppm |

| · **PAC-3:** | | |
|---|---|---|
| 7722-84-1 | Hydrogen peroxide | 100 ppm |

· **Reference to other sections**
See Section 7 for information on safe handling.

(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 3)

See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

## 7 Handling and storage

· **Precautions for safe handling**
No special precautions are necessary if used correctly.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid prolonged or repeated exposure.
Keep away from sources of ignition.
Take precautionary measures against static discharge.re.
· **Information about protection against explosions and fires:** No special measures required.

· **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:** | |
|---|---|
| **7722-84-1 Hydrogen peroxide** | |
| PEL | Long-term value: 1.4 mg/m³, 1 ppm |
| REL | Long-term value: 1.4 mg/m³, 1 ppm |
| TLV | Long-term value: 1 ppm<br>A3 |

· **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.
· **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:** Not required.
· **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

(Contd. on page 5)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 4)

· **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** | Fluid |
| · **Color:** | According to product specification |
| · **Odor:** | Characteristic |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | 100 µl of a 30% solution of hydrogen peroxide |
| · **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. |
| · **Decomposition temperature:** | Not determined. |
| · **pH-value:** | Not determined. |
| · **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 at 20 °C (68 °F):** | 1.135 g/cm³ (9.47158 lbs/gal) |
| · **Relative density** | Not determined. |
| · **Bulk density:** | 1,135 kg/m³ |
| · **Vapor density** | Not determined. |
| · **Particle characteristics** | Not applicable. |

| | |
|---|---|
| · **Other information** | |
| · **Appearance:** | |
| · **Form:** | Liquid |

(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 5)

| | |
|---|---|
| · **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:** | 70.0 % |
| · **VOC content:** | 0.00 %<br>0.0 g/l / 0.00 lb/gal |
| · **Solids content:** | 30.0 % |
| · **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:** | | |
|---|---|---|
| **ATE (Acute Toxicity Estimate)** | | |
| Oral | LD50 | 1,667 mg/kg |
| Inhalative | LC50/4 h | 36.7 mg/l |

| **7722-84-1 Hydrogen peroxide** | | |
|---|---|---|
| Oral | LDLO | 1,429 mg/kg (man) |
| | TDLO | 1,200 ml/kg (woman) |
| | LD50 | 820 mg/kg (rabbit) |
| Dermal | LD50 | 3 g/kg (rat) |
| Irritation of eyes | Irritation | 1 mg (rabbit)<br>severe |

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** Strong irritant with the danger of severe eye injury.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Irritant
· **Interactive effects** No interactive effects between components are known.

(Contd. on page 7)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 6)

· **Carcinogenic categories**

| · **IARC (International Agency for Research on Cancer)** | | |
|---|---|---|
| 7722-84-1 | Hydrogen peroxide | 3 |

| · **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.
· **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.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.

## 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** | |
|---|---|
| · **DOT, IMDG, IATA** | UN1760 |
| · **UN proper shipping name** | |
| · **DOT** | Corrosive liquids, n.o.s. |
| · **IMDG** | CORROSIVE LIQUID, N.O.S. |
| · **IATA** | Corrosive liquid, n.o.s. |

(Contd. on page 8)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 7)

· **Transport hazard class(es)**

· **DOT**


| | |
|---|---|
| · **Class** | 8 Corrosive substances |
| · **Label** | 8 |

· **IMDG, IATA**


| | |
|---|---|
| · **Class** | 8 Corrosive substances |
| · **Label** | 8 |
| · **Packing group** | |
| · **DOT, IMDG, IATA** | II |
| · **Environmental hazards:** | Not applicable. |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | |
| · **DOT** | |
| · **Quantity limitations** | On passenger aircraft/rail: 1 L<br>On cargo aircraft only: 30 L |
| · **IMDG** | |
| · **Limited quantities (LQ)** | 1L |
| · **Excepted quantities (EQ)** | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · **IATA** | |
| · **Remarks:** | When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.<br>Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity. |
| · **Special precautions for user** | Warning: Corrosive substances |
| · **Hazard identification number (Kemler code):** | 80 |
| · **EMS Number:** | F-A,S-B |
| · **Stowage Category** | B |
| · **Stowage Code** | SW2 Clear of living quarters. |
| · **UN "Model Regulation":** | UN 1760 CORROSIVE LIQUID, N.O.S. 8, II |



(Contd. on page 9)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 8)

## 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):**

| | |
|---|---|
| 7722-84-1 | Hydrogen peroxide |

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

· **TSCA (Toxic Substances Control Act):**
All components have the value 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)**

| | | |
|---|---|---|
| 7722-84-1 | Hydrogen peroxide | A3 |

· **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 previous version** 02/24/2023
· **Date of preparation** 11/19/2024
· **Abbreviations and acronyms:**
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation

(Contd. on page 10)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: MPO Hydrogen Peroxide**

(Contd. from page 9)

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
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute toxicity - oral 4: Acute toxicity – Category 4
Eye damage 1: Serious eye damage/eye irritation – Category 1
· *** Data compared to the previous version altered.**

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

Date of issue: 11/19/2024 Revision date 11/19/2024

* 
## 1 Identification

· **Product identifier**

· **Trade name: Fluorescein Standard**
· **Other means of identification**

· **Article number:** 700169
· **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**


GHS02 Flame

Flammable liquids 2 H225 Highly flammable liquid and vapor.


GHS07

Eye irritation 2A H319 Causes serious eye irritation.

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


GHS02


GHS07

· **Signal word** Danger

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 1)

· **Hazard statements**
H225 Highly flammable liquid and vapor.
H319 Causes serious eye irritation.
· **Precautionary statements**

| | |
|---|---|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P233 | Keep container tightly closed. |
| P240 | Ground / bond container and receiving equipment. |
| P241 | Use explosion-proof [electrical/ventilating/lighting] equipment. |
| P242 | Use non-sparking tools. |
| P243 | Take action to prevent static discharge. |
| P264 | Wash thoroughly after handling. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. |
| P303+P361+P353 | If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or 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. |
| P337+P313 | If eye irritation persists: Get medical advice/attention. |
| P370+P378 | In case of fire: Use CO2, powder or water spray to extinguish. |
| P403+P235 | Store in a well-ventilated place. Keep cool. |
| 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 = 3
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**


Health = 2
Fire = 3
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Classification according to (d)(1)(ii) of § 1910.12000**
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.

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 2)

| · **Dangerous components:** | | |
|---|---|---|
| CAS: 64-17-5<br>RTECS: KQ6300000 | ethanol | 99.967% |

| · **Other ingredients** | | |
|---|---|---|
| CAS: 2321-07-5<br>RTECS: LM5075000 | Fluorescein (free acid) | 0.033% |

* 
## 4 First-aid measures

· **Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Immediately rinse with water.
· **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:**
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.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **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:** | | |
|---|---|---|
| 64-17-5 | ethanol | 1,800 ppm |
| 2321-07-5 | Fluorescein (free acid) | 20 mg/m³ |

| · **PAC-2:** | | |
|---|---|---|
| 64-17-5 | ethanol | 3300* ppm |
| 2321-07-5 | Fluorescein (free acid) | 220 mg/m³ |

(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 3)

| · **PAC-3:** | | |
|---|---|---|
| 64-17-5 | ethanol | 15000* ppm |
| 2321-07-5 | Fluorescein (free acid) | 1,300 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**
No special precautions are necessary if used correctly.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid prolonged or repeated exposure.
Keep away from sources of ignition.
Take precautionary measures against static discharge.re.
· **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

· **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:** Store in a cool location.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· **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:** | |
|---|---|
| **64-17-5 ethanol** | |
| PEL | Long-term value: 1900 mg/m³, 1000 ppm |
| REL | Long-term value: 1900 mg/m³, 1000 ppm |
| TLV | Short-term value: 1000 ppm<br>A3 |

· **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.
· **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:** Not required.

(Contd. on page 5)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 4)

· **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** | Fluid |
| · **Color:** | According to product specification |
| · **Odor:** | Alcohol-like |
| · **Storage Buffer** | |
| · **Odor threshold:** | Not determined. |
| · **Formulation** | 100 µl of a 1 mM solution of fluorescein |
| · **Melting point/Melting range:** | -114 °C (-173.2 °F) |
| · **Boiling point/Boiling range:** | 78 °C (172.4 °F) |
| · **Flammability:** | Highly flammable. |
| · **Explosion limits:** | |
| · **Lower:** | 3.3 Vol % |
| · **Upper:** | 19 Vol % |
| · **Flash point:** | 13 °C (55.4 °F) |
| · **Auto igniting:** | 425 °C (797 °F) |
| · **Decomposition temperature:** | Not determined. |
| · **pH-value:** | Not determined. |
| · **Viscosity:** | |
| · **Kinematic:** | Not determined. |
| · **SOLUBILITY** | |
| · **Dynamic at 20 °C (68 °F):** | 1.2 mPas |
| · **Solubility in / Miscibility with** | |
| · **Water at 20 °C (68 °F):** | 1,000 g/l |
| · **Partition coefficient (n-octanol/water):** | Not determined. |

(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 5)

| | |
|---|---|
| · **Vapor pressure at 20 °C (68 °F):** | 59 hPa (44.3 mm Hg) |
| · **Vapor pressure at 50 °C (122 °F):** | 280 hPa (210 mm Hg) |
| · **Density at 20 °C (68 °F):** | 0.79007 g/cm³ (6.59313 lbs/gal) |
| · **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 is not explosive. However, formation of explosive air/vapor mixtures are possible. |
| · **Solvent content:** | |
| · **Organic solvents:** | 100.0 % |
| · **VOC content:** | 99.97 %<br>789.8 g/l / 6.59 lb/gal |
| · **Solids content:** | 0.0 % |
| · **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:** | | |
|---|---|---|
| **64-17-5 ethanol** | | |
| Oral | LD50 | 10,470 mg/kg (rat)<br>OECD Test Guideline 401 |
| Inhalative | LC50/4 h | 117–125 mg/l (rat)<br>OECD 403 (rat) |

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.

(Contd. on page 7)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 6)

· **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)** | | |
|---|---|---|
| 64-17-5 | ethanol | 1 |

| · **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.
· **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**
· **DOT, IMDG, IATA** UN1170

(Contd. on page 8)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 7)

| | |
|---|---|
| · **UN proper shipping name** | |
| · **DOT** | Ethanol solutions |
| · **IMDG** | ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION) |
| · **IATA** | Ethanol solution |
| · **Transport hazard class(es)** | |
| · **DOT** |   |
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |
| · **IMDG, IATA** |   |
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |
| · **Packing group** | |
| · **DOT, IMDG, IATA** | II |
| · **Environmental hazards:** | Not applicable. |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | |
| · **DOT** | |
| · **Quantity limitations** | On passenger aircraft/rail: 5 L<br>On cargo aircraft only: 60 L |
| · **IMDG** | |
| · **Limited quantities (LQ)** | 1L |
| · **Excepted quantities (EQ)** | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · **IATA** | |
| · **Remarks:** | When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10.<br>Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity. |
| · **Special precautions for user** | Warning: Flammable liquids |
| · **Hazard identification number (Kemler code):** | 33 |
| · **EMS Number:** | F-E,S-D |

(Contd. on page 9)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 8)

| | |
|---|---|
| · **Stowage Category** | A |
| · **UN "Model Regulation":** | UN 1170 ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION), 3, II |

## 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.

· **TSCA (Toxic Substances Control Act):**
All components have the value 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:**

| | |
|---|---|
| 64-17-5 | ethanol |

· **Carcinogenic categories**

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

· **TLV (Threshold Limit Value)**

| | | |
|---|---|---|
| 64-17-5 | ethanol | A3 |

· **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.

(Contd. on page 10)

# Safety Data Sheet
## acc. to OSHA HCS

Date of issue: 11/19/2024 Revision date 11/19/2024

**Trade name: Fluorescein Standard**

(Contd. from page 9)

· **Contact:** -
· **Date of previous version** 02/24/2023
· **Date of preparation** 11/19/2024
· **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
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Flammable liquids 2: Flammable liquids – Category 2
Eye irritation 2A: Serious eye damage/eye irritation – Category 2A
· *** Data compared to the previous version altered.**