

# Safety Data Sheet

acc. to OSHA HCS

Printing date 11/16/2022

Reviewed on 11/16/2022

## 1 Identification

- **Product identifier**
- **Trade name:** HOLLANDE'S FIXATIVE
- **Article number:** 64120-01, 64120-30, 64120-10, 64120-20, 64120-10-SP, 64120-04
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
 Electron Microscopy Sciences  
 1560 Industry Road  
 USA-Hatfield, PA 19440  
 Tel: 215-412-8400 Fax: 215-412-8450  
 email: sgkcck@aol.com  
 www.emsdiasum.com
- **Information department:** Product safety department
- **Emergency telephone number:**  
 ChemTrec 1-800-424-9300 Contract CCN7661  
 1-703-527-3887

## 2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS08 Health hazard

Sensitization - Respiratory 1A

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ Cell Mutagenicity 1B

H340 May cause genetic defects.

Carcinogenicity 1A

H350 May cause cancer.

Specific Target Organ Toxicity - Single Exposure 2

H371 May cause damage to organs.

Specific Target Organ Toxicity - Repeated Exposure 2

H373 May cause damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

Eye Damage 1

H318 Causes serious eye damage.



GHS07

Acute Toxicity - Inhalation 4

H332 Harmful if inhaled.

Skin Irritation 2

H315 Causes skin irritation.

Sensitization - Skin 1A

H317 May cause an allergic skin reaction.

- **Label elements**

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

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· **Hazard pictograms**

GHS05   GHS07   GHS08

· **Signal word** *Danger*· **Hazard-determining components of labeling:***formaldehyde**cupric acetate**2,4,6-trinitrophenol**Acetic Acid Glacial*· **Hazard statements***Harmful if inhaled.**Causes skin irritation.**Causes serious eye damage.**May cause allergy or asthma symptoms or breathing difficulties if inhaled.**May cause an allergic skin reaction.**May cause genetic defects.**May cause cancer.**May cause damage to organs.**May cause damage to organs through prolonged or repeated exposure.*· **Precautionary statements***Obtain special instructions before use.**Do not handle until all safety precautions have been read and understood.**Do not breathe dust/fume/gas/mist/vapors/spray.**Wash thoroughly after handling.**Do not eat, drink or smoke when using this product.**Use only outdoors or in a well-ventilated area.**Contaminated work clothing must not be allowed out of the workplace.**Wear protective gloves/protective clothing/eye protection/face protection.**[In case of inadequate ventilation] wear respiratory protection.**If on skin: Wash with plenty of water.**IF INHALED: Remove person to fresh air and keep comfortable for breathing.**If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.**Continue rinsing.**Immediately call a poison center/doctor.**IF exposed or concerned: Get medical advice/attention.**Specific treatment (see on this label).**Get medical advice/attention if you feel unwell.**Take off contaminated clothing and wash it before reuse.**If skin irritation or rash occurs: Get medical advice/attention.**If experiencing respiratory symptoms: Call a poison center/doctor.**Wash contaminated clothing before reuse.**Store locked up.**Dispose of contents/container in accordance with local/regional/national/international regulations.*· **Classification system:**· **NFPA ratings (scale 0 - 4)***Health = 2**Fire = 2**Reactivity = 3*

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· **HMIS-ratings (scale 0 - 4)**

HEALTH	2	Health = 2
FIRE	2	Fire = 2
REACTIVITY	3	Reactivity = 3

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

### 3 Composition/information on ingredients

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

· **Dangerous components:**

50-00-0	formaldehyde	>10-≤25%
64-19-7	Acetic Acid Glacial	>2.5-≤10%
6046-93-1	cupric acetate	≤2.5%
88-89-1	2,4,6-trinitrophenol	≤2.5%

### 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 and to be sure call for a doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **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** Not required.

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- **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 item 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

50-00-0	formaldehyde	0.90 ppm
64-19-7	Acetic Acid Glacial	5 ppm
6046-93-1	cupric acetate	9.4 mg/m <sup>3</sup>
88-89-1	2,4,6-trinitrophenol	0.3 mg/m <sup>3</sup>

· **PAC-2:**

50-00-0	formaldehyde	14 ppm
64-19-7	Acetic Acid Glacial	35 ppm
6046-93-1	cupric acetate	23 mg/m <sup>3</sup>
88-89-1	2,4,6-trinitrophenol	17 mg/m <sup>3</sup>

· **PAC-3:**

50-00-0	formaldehyde	56 ppm
64-19-7	Acetic Acid Glacial	250 ppm
6046-93-1	cupric acetate	140 mg/m <sup>3</sup>
88-89-1	2,4,6-trinitrophenol	100 mg/m <sup>3</sup>

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle receptacle with care.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** 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

- **Additional information about design of technical systems:** No further data; see item 7.

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- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

### 50-00-0 formaldehyde

PEL Short-term value: 2 ppm  
Long-term value: 0.75 ppm  
see 29 CFR 1910.1048(c)

REL Long-term value: 0.016 ppm  
Ceiling limit value: 0.1\* ppm  
\*15-min; See Pocket Guide App. A

TLV Short-term value: 0.3 ppm  
Long-term value: 0.1 ppm  
DSEN; RSEN, AI

### 64-19-7 Acetic Acid Glacial

PEL Long-term value: 25 mg/m<sup>3</sup>, 10 ppm

REL Short-term value: 37 mg/m<sup>3</sup>, 15 ppm  
Long-term value: 25 mg/m<sup>3</sup>, 10 ppm

TLV Short-term value: 15 ppm  
Long-term value: 10 ppm

### 88-89-1 2,4,6-trinitrophenol

PEL Long-term value: 0.1 mg/m<sup>3</sup>  
Skin

REL Short-term value: 0.3 mg/m<sup>3</sup>  
Long-term value: 0.1 mg/m<sup>3</sup>  
Skin

TLV Long-term value: 0.1 mg/m<sup>3</sup>

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Exposure controls**

- **Personal protective equipment:**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.  
Store protective clothing separately.  
Avoid contact with the skin.  
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.

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*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**

- **Appearance:**

<b>Form:</b>	Liquid
<b>Color:</b>	Green
<b>Odor:</b>	Pungent
<b>Odor threshold:</b>	Not determined.

- **pH-value:** Not determined.

- **Change in condition**

<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	Undetermined.

- **Flash point:** Not applicable.

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

- **Ignition temperature:** ~300 °C (~572 °F)

- **Decomposition temperature:** Not determined.

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

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

- **Explosion limits:**

<b>Lower:</b>	7 Vol %
<b>Upper:</b>	73 Vol %

- **Vapor pressure at 20 °C (68 °F):** 1.7 hPa (1.3 mm Hg)

- **Density:** Not determined.

- **Relative density** Not determined.

- **Vapor density** Not determined.

- **Evaporation rate** Not determined.

- **Solubility in / Miscibility with**

**Water:** Fully miscible.

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

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· <b>Viscosity:</b>	
<b>Dynamic:</b>	Not determined.
<b>Kinematic:</b>	Not determined.
· <b>Solvent content:</b>	
<b>Organic solvents:</b>	29.0 %
<b>Water:</b>	67.5 %
<b>VOC content:</b>	29.00 %
	893.4 g/l / 7.46 lb/gal
<b>Solids content:</b>	0.0 %
· <b>Other information</b>	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

50-00-0 formaldehyde

Oral	LD50	>200 mg/kg (rat)
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- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Strong irritant with the danger of severe eye injury.
- **Sensitization:**

Sensitization possible through inhalation.  
Sensitization possible through skin contact.

- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:  
Harmful  
Irritant  
Carcinogenic.  
The product can cause inheritable damage.

- **Carcinogenic categories**

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

50-00-0 formaldehyde

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- **NTP (National Toxicology Program)**

50-00-0 formaldehyde

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- **OSHA-Ca (Occupational Safety Health Administration)**
- 50-00-0 formaldehyde


## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **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.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14 Transport information

- |   |   |
|---|---|
| <b>UN-Number</b>  | UN2209                                  |
| <b>DOT, ADR, IMDG, IATA</b>   |   |
| <b>UN proper shipping name</b>  | Formaldehyde solutions                  |
| <b>DOT</b>  | 2209 FORMALDEHYDE SOLUTION              |
| <b>ADR</b>  | FORMALDEHYDE SOLUTION, MARINE POLLUTANT |
| <b>IMDG</b>   | FORMALDEHYDE SOLUTION                   |
| <b>IATA</b>   | FORMALDEHYDE SOLUTION                   |
| <b>Transport hazard class(es)</b>   |   |
| <b>DOT</b>  |   |
|  |   |
| <b>Class</b>  | 8 Corrosive substances                  |

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· **Label** 8

· **ADR, IMDG**



· **Class** 8 Corrosive substances

· **Label** 8

· **IATA**



· **Class** 8 Corrosive substances

· **Label** 8

· **Packing group**

· **DOT, ADR, IMDG, IATA** III

· **Environmental hazards:**

· **Marine pollutant:** Yes (DOT)  
Symbol (fish and tree)

· **Special marking (ADR):** Symbol (fish and tree)

· **Special precautions for user** Warning: Corrosive substances

· **Hazard identification number (Kemler code):** 80

· **EMS Number:** F-A,S-B

· **Segregation groups** (SGGI) Acids

· **Stowage Category** A

· **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  
On cargo aircraft only: 60

· **Remarks:** Special marking with the symbol (fish and tree).

· **ADR**

· **Excepted quantities (EQ)** Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml

· **IMDG**

· **Limited quantities (LQ)** 5L

· **Excepted quantities (EQ)** Code: E1  
Maximum net quantity per inner packaging: 30 ml  
Maximum net quantity per outer packaging: 1000 ml

· **UN "Model Regulation":** UN 2209 FORMALDEHYDE SOLUTION, 8, III

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## 15 Regulatory information

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

· Sara

· Section 355 (extremely hazardous substances):

50-00-0	formaldehyde
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· Section 313 (Specific toxic chemical listings):

50-00-0	formaldehyde
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88-89-1	2,4,6-trinitrophenol
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· TSCA (Toxic Substances Control Act):

7732-18-5	Deionized Water, Reagent Grade A.C.S.	ACTIVE
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50-00-0	formaldehyde	ACTIVE
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64-19-7	Acetic Acid Glacial	ACTIVE
---------	---------------------	--------

88-89-1	2,4,6-trinitrophenol	ACTIVE
---------	----------------------	--------

· Hazardous Air Pollutants

50-00-0	formaldehyde
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· Proposition 65

· Chemicals known to cause cancer:

50-00-0	formaldehyde
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· 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)

50-00-0	formaldehyde	B1
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· TLV (Threshold Limit Value)

50-00-0	formaldehyde	A2
---------	--------------	----

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

50-00-0	formaldehyde
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· GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS05    GHS07    GHS08

· Signal word *Danger*

· Hazard-determining components of labeling:

formaldehyde

cupric acetate

2,4,6-trinitrophenol

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*Acetic Acid Glacial*

· **Hazard statements**

*Harmful if inhaled.*

*Causes skin irritation.*

*Causes serious eye damage.*

*May cause allergy or asthma symptoms or breathing difficulties if inhaled.*

*May cause an allergic skin reaction.*

*May cause genetic defects.*

*May cause cancer.*

*May cause damage to organs.*

*May cause damage to organs through prolonged or repeated exposure.*

· **Precautionary statements**

*Obtain special instructions before use.*

*Do not handle until all safety precautions have been read and understood.*

*Do not breathe dust/fume/gas/mist/vapors/spray.*

*Wash thoroughly after handling.*

*Do not eat, drink or smoke when using this product.*

*Use only outdoors or in a well-ventilated area.*

*Contaminated work clothing must not be allowed out of the workplace.*

*Wear protective gloves/protective clothing/eye protection/face protection.*

*[In case of inadequate ventilation] wear respiratory protection.*

*If on skin: Wash with plenty of water.*

*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

*If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.*

*Continue rinsing.*

*Immediately call a poison center/doctor.*

*IF exposed or concerned: Get medical advice/attention.*

*Specific treatment (see on this label).*

*Get medical advice/attention if you feel unwell.*

*Take off contaminated clothing and wash it before reuse.*

*If skin irritation or rash occurs: Get medical advice/attention.*

*If experiencing respiratory symptoms: Call a poison center/doctor.*

*Wash contaminated clothing before reuse.*

*Store locked up.*

*Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **National regulations:**

· **Information about limitation of use:**

*Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.*

*Exceptions can be made by the authorities in certain cases.*

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

## 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Contact:**

· **Date of preparation / last revision** 11/16/2022 / -

· **Abbreviations and acronyms:**

*ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)*

*IMDG: International Maritime Code for Dangerous Goods*

*DOT: US Department of Transportation*

*IATA: International Air Transport Association*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

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*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 - Inhalation 4: Acute toxicity – Category 4******Skin Irritation 2: Skin corrosion/irritation – Category 2******Eye Damage 1: Serious eye damage/eye irritation – Category 1******Sensitization - Respiratory 1A: Respiratory sensitisation – Category 1A******Sensitization - Skin 1A: Skin sensitisation – Category 1A******Germ Cell Mutagenicity 1B: Germ cell mutagenicity – Category 1B******Carcinogenicity 1A: Carcinogenicity – Category 1A******Specific Target Organ Toxicity - Single Exposure 2: Specific target organ toxicity (single exposure) – Category 2******Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2***

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