

Safety Data Sheet

acc. to OSHA HCS

Printing date 11/14/2022

Reviewed on 11/14/2022

1 Identification

- **Product identifier**
- **Trade name:** FORMALIN-ACETONE FIXATIVE
- **Article number:** 26173-01
- **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: info@emsdiasum.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**



GHS02 Flame

Flammable Liquids 2

H225

Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Toxicity - Oral 3

H301

Toxic if swallowed.

Acute Toxicity - Dermal 3

H311

Toxic in contact with skin.

Acute Toxicity - Inhalation 3

H331

Toxic if inhaled.



GHS08 Health hazard

Germ Cell Mutagenicity 2

H341

Suspected of causing genetic defects.

Carcinogenicity 1B

H350

May cause cancer.

Specific Target Organ Toxicity - Single Exposure 1

H370-H371

Causes damage to organs. May cause damage to the central nervous system and the visual organs.

Specific Target Organ Toxicity - Repeated Exposure 1 H372

Causes damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

Eye Damage 1

H318

Causes serious eye damage.

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GHS07

Skin Irritation 2	H315	Causes skin irritation.
Sensitization - Skin 1	H317	May cause an allergic skin reaction.
Specific Target Organ Toxicity - Single Exposure 3	H336	May cause drowsiness or dizziness.

· **Label elements**

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

· **Hazard pictograms**



GHS02

GHS05

GHS06

GHS07

GHS08

· **Signal word** *Danger*

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

formaldehyde

Acetone, Reagent Grade

Methyl Alcohol

· **Hazard statements**

Highly flammable liquid and vapor.

Toxic if swallowed, in contact with skin or if inhaled.

Causes skin irritation.

Causes serious eye damage.

May cause an allergic skin reaction.

Suspected of causing genetic defects.

May cause cancer.

Causes damage to organs. May cause damage to the central nervous system and the visual organs.

May cause drowsiness or dizziness.

Causes 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.

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe dusts or mists.

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.

If swallowed: Immediately call a poison center/doctor.

Specific treatment (see on this label).

Rinse mouth.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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

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

IF exposed or concerned: Get medical advice/attention.

Call a poison center/doctor if you feel unwell.

Get medical advice/attention if you feel unwell.

Take off immediately all contaminated clothing and wash it before reuse.

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

In case of fire: Use CO₂, powder or water spray to extinguish.

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

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

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 3

Fire = 3

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = *3

Fire = 3

Reactivity = 0

· **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:**

67-64-1	Acetone, Reagent Grade	>25-≤50%
50-00-0	formaldehyde	>10-≤25%
67-56-1	Methyl Alcohol	>2.5-≤10%

4 First-aid measures

· **Description of first aid measures**

· **General information:**

Immediately remove any clothing soiled by the product.

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

Remove breathing apparatus only after contaminated clothing have been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After inhalation:**

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:** *Immediately wash with water and soap and rinse thoroughly.*

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- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Do not induce vomiting; immediately call for medical help.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** CO₂, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **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:** 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.
Do not flush with water or aqueous cleansing agents
- **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:**

67-64-1	Acetone, Reagent Grade	200 ppm
50-00-0	formaldehyde	0.90 ppm
67-56-1	Methyl Alcohol	530 ppm
7778-77-0	potassium dihydrogenorthophosphate	9.6 mg/m ³

· **PAC-2:**

67-64-1	Acetone, Reagent Grade	3200* ppm
50-00-0	formaldehyde	14 ppm
67-56-1	Methyl Alcohol	2,100 ppm
7778-77-0	potassium dihydrogenorthophosphate	110 mg/m ³

· **PAC-3:**

67-64-1	Acetone, Reagent Grade	5700* ppm
50-00-0	formaldehyde	56 ppm
67-56-1	Methyl Alcohol	7200* ppm
7778-77-0	potassium dihydrogenorthophosphate	630 mg/m ³

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7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
 Ensure good ventilation/exhaustion at the workplace.
 Open and handle receptacle with care.
 Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
 Keep ignition sources away - Do not smoke.
 Protect from heat.
 Protect against electrostatic charges.
 Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **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.
 Protect from heat and direct sunlight.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

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

<ul style="list-style-type: none"> · Components with limit values that require monitoring at the workplace:

67-64-1 Acetone, Reagent Grade

PEL	Long-term value: 2400 mg/m ³ , 1000 ppm
REL	Long-term value: 590 mg/m ³ , 250 ppm
TLV	Short-term value: 500 ppm Long-term value: 250 ppm A4, BEI

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, A1

67-56-1 Methyl Alcohol

PEL	Long-term value: 260 mg/m ³ , 200 ppm
REL	Short-term value: 325 mg/m ³ , 250 ppm Long-term value: 260 mg/m ³ , 200 ppm Skin

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TLV	Short-term value: 250 ppm Long-term value: 200 ppm Skin; BEI
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· Ingredients with biological limit values:

67-64-1 Acetone, Reagent Grade

BEI	25 mg/L Medium: urine Time: end of shift Parameter: Acetone (nonspecific)
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67-56-1 Methyl Alcohol

BEI	15 mg/L Medium: urine Time: end of shift Parameter: Methanol (background, nonspecific)
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· 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.

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.

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· **Eye protection:**

Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**· **General Information**· **Appearance:**

· Form:	Liquid
· Color:	Clear
· Odor:	Pungent
· Odor threshold:	Not determined.

· **pH-value:** Not determined.· **Change in condition**

· Melting point/Melting range:	Undetermined.
· Boiling point/Boiling range:	Undetermined.

· **Flash point:** -20 °C (-4 °F)· **Flammability (solid, gaseous):** Highly flammable.· **Ignition temperature:** 465 °C (869 °F)· **Decomposition temperature:** Not determined.· **Auto igniting:** Product is not selfigniting.· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.· **Explosion limits:**

· Lower:	Not determined.
· Upper:	Not determined.

· **Vapor pressure:** Not determined.· **Density:** Not determined.· **Relative density** Not determined.· **Vapor density** Not determined.· **Evaporation rate** Not determined.· **Solubility in / Miscibility with**· **Water:** Not miscible or difficult to mix.· **Partition coefficient (n-octanol/water):** Not determined.· **Viscosity:**

· Dynamic:	Not determined.
· Kinematic:	Not determined.

· **Solvent content:**

· Organic solvents:	73.8 %
· Water:	26.1 %

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VOC content:	28.75 % 1,692.4 g/l / 14.12 lb/gal
Solids content:	0.0 %
Other information	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)

- **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 skin contact.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Toxic
Irritant
Carcinogenic.

- **Carcinogenic categories**

· IARC (International Agency for Research on Cancer)		
50-00-0	formaldehyde	I
· NTP (National Toxicology Program)		
50-00-0	formaldehyde	K
· 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.

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- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
*Water hazard class 3 (Self-assessment): extremely hazardous for water
 Do not allow product to reach ground water, water course or sewage system, even in small quantities.
 Danger to drinking water if even extremely 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.*

14 Transport information

- | | |
|---------------------------------------|---|
| · UN-Number | UN1090 |
| · DOT, ADR, IMDG, IATA | |
| · UN proper shipping name | Acetone solution |
| · DOT | 1090 ACETONE solution |
| · ADR | ACETONE solution |
| · IMDG, IATA | |
| · Transport hazard class(es) | |
| · DOT | |
| |  |
| · Class | 3 Flammable liquids |
| · Label | 3 |
| | |
| · ADR, IMDG, IATA | |
| |  |
| · Class | 3 Flammable liquids |
| · Label | 3 |
| · Packing group | II |
| · DOT, ADR, IMDG, IATA | |
| · Environmental hazards: | Not applicable. |
| · Special precautions for user | Warning: Flammable liquids |

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· Hazard identification number (Kemler code): 33	
· EMS Number:	F-E,S-D
· Stowage Category	E
· 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 L
· ADR	
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 1090 ACETONE SOLUTION, 3, II

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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67-56-1	Methyl Alcohol
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· **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.	
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· **Hazardous Air Pollutants**

50-00-0	formaldehyde
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67-56-1	Methyl Alcohol
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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.	
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· **Chemicals known to cause reproductive toxicity for males:**

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

67-56-1	Methyl Alcohol
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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

67-64-1	Acetone, Reagent Grade	I
50-00-0	formaldehyde	B1

· **TLV (Threshold Limit Value)**

67-64-1	Acetone, Reagent Grade	A4
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**



GHS02 GHS05 GHS06 GHS07 GHS08

· **Signal word** *Danger*

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

formaldehyde

Acetone, Reagent Grade

Methyl Alcohol

· **Hazard statements**

Highly flammable liquid and vapor.

Toxic if swallowed, in contact with skin or if inhaled.

Causes skin irritation.

Causes serious eye damage.

May cause an allergic skin reaction.

Suspected of causing genetic defects.

May cause cancer.

Causes damage to organs. May cause damage to the central nervous system and the visual organs.

May cause drowsiness or dizziness.

Causes 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.

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Do not breathe dusts or mists.

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.

If swallowed: Immediately call a poison center/doctor.

Specific treatment (see on this label).

Rinse mouth.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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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.

IF exposed or concerned: Get medical advice/attention.

Call a poison center/doctor if you feel unwell.

Get medical advice/attention if you feel unwell.

Take off immediately all contaminated clothing and wash it before reuse.

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

In case of fire: Use CO₂, powder or water spray to extinguish.

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

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** 11/14/2022 / -

· **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

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 2: Flammable liquids – Category 2

Acute Toxicity - Oral 3: Acute toxicity – Category 3

Skin Irritation 2: Skin corrosion/irritation – Category 2

Eye Damage 1: Serious eye damage/eye irritation – Category 1

Sensitization - Skin 1: Skin sensitisation – Category 1

Germ Cell Mutagenicity 2: Germ cell mutagenicity – Category 2

Carcinogenicity 1B: Carcinogenicity – Category 1B

Specific Target Organ Toxicity - Single Exposure 1: Specific target organ toxicity (single exposure) – Category 1

Specific Target Organ Toxicity - Repeated Exposure 1: Specific target organ toxicity (repeated exposure) – Category 1