

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

## 1 Identification

- **Product identifier**
- **Trade name:** JB-4 SOLUTION B
- **Article number:** 14270-04
- **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: 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**



GHS07

Acute Toxicity - Dermal 4 H312 Harmful in contact with skin.  
Acute Toxicity - Inhalation 4 H332 Harmful if inhaled.  
Skin Irritation 2 H315 Causes skin irritation.

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



GHS07

- **Signal word** Warning
- **Hazard-determining components of labeling:**  
N,N-dimethylaniline  
ethylene oxide  
formaldehyde
- **Hazard statements**  
Harmful in contact with skin or if inhaled.  
Causes skin irritation.
- **Precautionary statements**  
Avoid breathing dust/fume/gas/mist/vapors/spray  
Wash thoroughly after handling.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves / protective clothing.  
If on skin: Wash with plenty of water.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.

(Contd. on page 2)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 1)

Call a poison center/doctor if you feel unwell.

Specific treatment (see on this label).

Take off contaminated clothing and wash it before reuse.

If skin irritation occurs: Get medical advice/attention.

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

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



Health = 2

Fire = 1

Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = 2

Fire = 1

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:**

25322-68-3	Polyethylene glycol	>50-≤100%
121-69-7	N,N-dimethylaniline	>2.5-≤10%
50-00-0	formaldehyde	≤2.5%
75-07-0	acetaldehyde	≤2.5%
75-21-8	ethylene oxide	≤2.5%
123-91-1	1,4-dioxane	≤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. 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 wash with water and soap and rinse thoroughly.

· **After eye contact:** Rinse opened eye for several minutes under running water.

· **After swallowing:** If symptoms persist consult doctor.

· **Information for doctor:**

· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

(Contd. on page 3)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 2)

- **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

## 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, 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** Not required.
- **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:**

25322-68-3	Polyethylene glycol	30 mg/m <sup>3</sup>
121-69-7	N,N-dimethylaniline	10 ppm
50-00-0	formaldehyde	0.90 ppm
75-07-0	acetaldehyde	45 ppm
75-21-8	ethylene oxide	5 ppm
123-91-1	1,4-dioxane	17 ppm

- **PAC-2:**

25322-68-3	Polyethylene glycol	1,300 mg/m <sup>3</sup>
121-69-7	N,N-dimethylaniline	330 ppm
50-00-0	formaldehyde	14 ppm
75-07-0	acetaldehyde	270 ppm
75-21-8	ethylene oxide	45 ppm
123-91-1	1,4-dioxane	320 ppm

- **PAC-3:**

25322-68-3	Polyethylene glycol	7,700 mg/m <sup>3</sup>
121-69-7	N,N-dimethylaniline	2,000 ppm
50-00-0	formaldehyde	56 ppm
75-07-0	acetaldehyde	840 ppm
75-21-8	ethylene oxide	200 ppm

(Contd. on page 4)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

123-91-1 | 1,4-dioxane

(Contd. of page 3)

760 ppm

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
Ensure good ventilation/exhaustion at the workplace.  
Prevent formation of aerosols.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** 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.
- **Control parameters**

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

### 25322-68-3 Polyethylene glycol

WEEL Long-term value: 10 mg/m<sup>3</sup>  
(H); MW>200

### 121-69-7 N,N-dimethylaniline

PEL Long-term value: 25 mg/m<sup>3</sup>, 5 ppm  
Skin

REL Short-term value: 50 mg/m<sup>3</sup>, 10 ppm  
Long-term value: 25 mg/m<sup>3</sup>, 5 ppm  
Skin

TLV Short-term value: 10 ppm  
Long-term value: 5 ppm  
Skin; BEI-M, A4

### 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

### 75-07-0 acetaldehyde

PEL Long-term value: 360 mg/m<sup>3</sup>, 200 ppm

REL See Pocket Guide Apps. A and C

(Contd. on page 5)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

**Trade name: JB-4 SOLUTION B**

(Contd. of page 4)

TLV	Ceiling limit value: 25 ppm A2
<b>75-21-8 ethylene oxide</b>	
PEL	Short-term value: 5 ppm Long-term value: 1 ppm see 29 CFR 1910.1047(c)
REL	Long-term value: 0.18 mg/m <sup>3</sup> , <0.1 ppm Ceiling limit value: 9* mg/m <sup>3</sup> , 5* ppm See Pocket Guide App. A; *10-min/day
TLV	Long-term value: 1 ppm BEI, Skin, A2
<b>123-91-1 1,4-dioxane</b>	
PEL	Long-term value: 360 mg/m <sup>3</sup> , 100 ppm Skin
REL	Ceiling limit value: 3.6* mg/m <sup>3</sup> , 1* ppm *30-min; See Pocket Guide App. A
TLV	Long-term value: 20 ppm Skin, A3

**· Ingredients with biological limit values:**
**121-69-7 N,N-dimethylaniline**

BEI	1.5 % of hemoglobin Medium: blood Time: during or end of shift Parameter: Methemoglobin (background, nonspecific, semi-quantitative)
-----	---

**75-21-8 ethylene oxide**

BEI	5000 pmol HEV/g globin Medium: hemoglobin adducts Time: not critical Parameter: N-(2-hydroxyethyl)valine (HEV) (nonspecific) (workers having representative Ethylene oxide exposure during the previous 120 days)
	5 µg HEMA/g creatinine Medium: urine Time: end of shift Parameter: S-(2-hydroxyethyl)mercapturic acid (HEMA) (Population based, nonspecific)

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

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

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

(Contd. on page 6)

US

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 5)

· **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:** Goggles recommended during refilling.

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Characteristic
<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:** >93.3 °C (>199.9 °F)

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

· **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>	Not determined.
<b>Upper:</b>	Not determined.

· **Vapor pressure:** Not determined.

· **Density at 20 °C (68 °F):** 1.12 g/cm<sup>3</sup> (9.3464 lbs/gal)

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

· **Solubility in / Miscibility with**

**Water:** Fully miscible.

(Contd. on page 7)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 6)

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

· **Viscosity:**

**Dynamic:** Not determined.

**Kinematic:** Not determined.

· **Solvent content:**

**Organic solvents:** 2.0 %

**VOC content:** 2.00 %

22.4 g/l / 0.19 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:**

**121-69-7 N,N-dimethylaniline**

Oral LD50 1,410 mg/kg (rat)

Dermal LD50 1,770 mg/kg (rabbit)

· **Primary irritant effect:**

· **on the skin:** Irritant to skin and mucous membranes.

· **on the eye:** No 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

· **Carcinogenic categories**

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

121-69-7	N,N-dimethylaniline	3
50-00-0	formaldehyde	1
75-07-0	acetaldehyde	2B
75-21-8	ethylene oxide	1
123-91-1	1,4-dioxane	2B

(Contd. on page 8)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 7)

· <b>NTP (National Toxicology Program)</b>		
50-00-0	formaldehyde	K
75-07-0	acetaldehyde	R
75-21-8	ethylene oxide	K
123-91-1	1,4-dioxane	R
· <b>OSHA-Ca (Occupational Safety Health Administration)</b>		
50-00-0	formaldehyde	
75-21-8	ethylene oxide	

## 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 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.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14 Transport information

· <b>UN-Number</b>	
· <b>DOT, ADR, IMDG, IATA</b>	Void
· <b>UN proper shipping name</b>	
· <b>DOT, ADR, IMDG, IATA</b>	Void
· <b>Transport hazard class(es)</b>	
· <b>DOT, ADR, ADN, IMDG, IATA</b>	
· <b>Class</b>	Void

(Contd. on page 9)



# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 8)

- |  |                 |
|--|-----------------|
| · <b>Packing group</b>   | Void            |
| · <b>DOT, ADR, IMDG, IATA</b>  | Void            |
| · <b>Environmental hazards:</b>  | Not applicable. |
| · <b>Special precautions for user</b>  | Not applicable. |
| · <b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b> | Not applicable. |
| · <b>UN "Model Regulation":</b>  | Void            |

## 15 Regulatory information

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

· <b>Section 355 (extremely hazardous substances):</b>	
--	--

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

75-21-8	ethylene oxide
---------	----------------

· <b>Section 313 (Specific toxic chemical listings):</b>	
--	--

121-69-7	N,N-dimethylaniline
----------	---------------------

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

75-07-0	acetaldehyde
---------	--------------

75-21-8	ethylene oxide
---------	----------------

123-91-1	1,4-dioxane
----------	-------------

· <b>TSCA (Toxic Substances Control Act):</b>	
---	--

All components have the value ACTIVE.	
---------------------------------------	--

· <b>Hazardous Air Pollutants</b>	
-----------------------------------	--

121-69-7	N,N-dimethylaniline
----------	---------------------

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

75-07-0	acetaldehyde
---------	--------------

75-21-8	ethylene oxide
---------	----------------

123-91-1	1,4-dioxane
----------	-------------

· <b>Proposition 65</b>	
-------------------------	--

· <b>Chemicals known to cause cancer:</b>	
---	--

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

75-07-0	acetaldehyde
---------	--------------

75-21-8	ethylene oxide
---------	----------------

123-91-1	1,4-dioxane
----------	-------------

· <b>Chemicals known to cause reproductive toxicity for females:</b>	
--	--

75-21-8	ethylene oxide
---------	----------------

· <b>Chemicals known to cause reproductive toxicity for males:</b>	
--	--

75-21-8	ethylene oxide
---------	----------------

· <b>Chemicals known to cause developmental toxicity:</b>	
---	--

75-21-8	ethylene oxide
---------	----------------

(Contd. on page 10)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

Trade name: **JB-4 SOLUTION B**

(Contd. of page 9)

· **Carcinogenic categories**· **EPA (Environmental Protection Agency)**

50-00-0	formaldehyde	B1
75-07-0	acetaldehyde	B2
75-21-8	ethylene oxide	CaH
123-91-1	1,4-dioxane	L

· **TLV (Threshold Limit Value)**

121-69-7	N,N-dimethylaniline	A4
50-00-0	formaldehyde	A2
75-07-0	acetaldehyde	A3
75-21-8	ethylene oxide	A2
123-91-1	1,4-dioxane	A3

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

50-00-0	formaldehyde
75-07-0	acetaldehyde
75-21-8	ethylene oxide
123-91-1	1,4-dioxane

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

GHS07

· **Signal word** Warning· **Hazard-determining components of labeling:**

N,N-dimethylaniline

ethylene oxide

formaldehyde

· **Hazard statements**

Harmful in contact with skin or if inhaled.

Causes skin irritation.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray

Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Wear protective gloves / protective clothing.

If on skin: Wash with plenty of water.

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

Call a poison center/doctor if you feel unwell.

Specific treatment (see on this label).

Take off contaminated clothing and wash it before reuse.

If skin irritation occurs: Get medical advice/attention.

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

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

US

(Contd. on page 11)

# Safety Data Sheet

acc. to OSHA HCS

Printing date 12/02/2022

Reviewed on 12/02/2022

**Trade name: JB-4 SOLUTION B**

(Contd. of page 10)

## 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** 12/02/2022 / -

· **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**

**Acute Toxicity - Dermal 4: Acute toxicity – Category 4**

**Skin Irritation 2: Skin corrosion/irritation – Category 2**