

# Safety Data Sheet

acc. to OSHA HCS

Printing date 10/03/2016

Reviewed on 10/03/2016

## 1 Identification

- **Product identifier**
- **Trade name:** benzene
- **EC number:**  
200-753-7
- **Index number:**  
601-020-00-8
- **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](mailto:info@emsdiasum.com)  
[www.emsdiasum.com](http://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

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Muta. 1B H340 May cause genetic defects.

Carc. 1A H350 May cause cancer.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

- **Label elements**

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

- **Hazard pictograms**



GHS02



GHS07



GHS08

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Trade name: benzene

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- **Signal word** *Danger*

- **Hazard statements**

*Highly flammable liquid and vapor.*  
*Causes skin irritation.*  
*Causes serious eye irritation.*  
*May cause genetic defects.*  
*May cause cancer.*  
*Causes damage to organs through prolonged or repeated exposure.*  
*May be fatal if swallowed and enters airways.*

- **Precautionary statements**

*Keep away from heat/sparks/open flames/hot surfaces. No smoking.*  
*Use explosion-proof electrical/ventilating/lighting/equipment.*  
*Do not breathe dust/fume/gas/mist/vapors/spray.*  
*Wear protective gloves / eye protection / face protection.*  
*Ground/bond container and receiving equipment.*  
*Keep container tightly closed.*  
*Use only non-sparking tools.*  
*Take precautionary measures against static discharge.*  
*Wash thoroughly after handling.*  
*Do not eat, drink or smoke when using this product.*  
*Obtain special instructions before use.*  
*Do not handle until all safety precautions have been read and understood.*  
*IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*  
*If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*  
*If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.*  
*Continue rinsing.*  
*Specific treatment (see on this label).*  
*IF exposed or concerned: Get medical advice/attention.*  
*If skin irritation occurs: Get medical advice/attention.*  
*If eye irritation persists: Get medical advice/attention.*  
*Get medical advice/attention if you feel unwell.*  
*Do NOT induce vomiting.*  
*In case of fire: Use for extinction: CO2, powder or water spray.*  
*Take off contaminated clothing and wash it before reuse.*  
*Store locked up.*  
*Store in a well-ventilated place. Keep cool.*  
*Dispose of contents/container in accordance with local/regional/national/international regulations.*

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



- **Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

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· **vPvB:** Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**  
benzene
- **Identification number(s)**
- **EC number:** 200-753-7
- **Index number:** 601-020-00-8

### 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:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.
- **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:**  
CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **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:** No special measures required.

### 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.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** Open and handle receptacle with care.
- **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:**
- **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

- **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:**

### benzene

|     |  |
|-----|--|
| PEL | Short-term value: 15* mg/m <sup>3</sup> , 5* ppm<br>Long-term value: 3* mg/m <sup>3</sup> , 1* ppm<br>*table Z-2 for exclusions in 29CFR1910.1028(d) |
| REL | Short-term value: 1 ppm<br>Long-term value: 0.1 ppm<br>See Pocket Guide App. A   |
| TLV | Short-term value: 8 mg/m <sup>3</sup> , 2.5 ppm<br>Long-term value: 1.6 mg/m <sup>3</sup> , 0.5 ppm<br>Skin; BEI                                     |

- **Ingredients with biological limit values:**

### benzene

|     |   |
|-----|---|
| BEI | 25 µg/g creatinine<br>Medium: urine<br>Time: end of shift<br>Parameter: S-Phenylmercapturic acid (background) |
|     | 500 µg/g creatinine<br>Medium: urine<br>Time: end of shift<br>Parameter: t,t-Muconic acid (background)        |

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

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- **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 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.
- **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>           | Fluid           |
| <b>Color:</b>          | Colorless       |
| <b>Odor:</b>           | Aromatic        |
| <b>Odor threshold:</b> | Not determined. |

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

- **Change in condition**

|                                     |                |
|-------------------------------------|----------------|
| <b>Melting point/Melting range:</b> | 6 °C (43 °F)   |
| <b>Boiling point/Boiling range:</b> | 80 °C (176 °F) |

- **Flash point:** -11 °C (12 °F)

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

- **Ignition temperature:** 555 °C (1031 °F)

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|   |  |
|---|--|
| · <b>Decomposition temperature:</b>                               | Not determined.  |
| · <b>Auto igniting:</b>   | Not determined.  |
| · <b>Danger of explosion:</b>                                     | Product is not explosive. However, formation of explosive air/vapor mixtures are possible. |
| · <b>Explosion limits:</b>  |  |
| <b>Lower:</b>   | 1.2 Vol %  |
| <b>Upper:</b>   | 8 Vol %  |
| · <b>Vapor pressure at 20 °C (68 °F):</b>                         | 100 hPa (75 mm Hg)   |
| · <b>Density at 20 °C (68 °F):</b>                                | 0.88 g/cm <sup>3</sup> (7.344 lbs/gal)   |
| · <b>Relative density</b>   | Not determined.  |
| · <b>Vapor density</b>  | Not determined.  |
| · <b>Evaporation rate</b>   | Not determined.  |
| · <b>Solubility in / Miscibility with Water at 20 °C (68 °F):</b> | 0.7 g/l  |
| · <b>Partition coefficient (n-octanol/water):</b>                 | Not determined.  |
| · <b>Viscosity:</b>   |  |
| <b>Dynamic at 20 °C (68 °F):</b>                                  | 0.66 mPas  |
| <b>Kinematic:</b>   | Not determined.  |
| · <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:

|            |          |                   |
|------------|----------|-------------------|
| Oral       | LD50     | 4894 mg/kg (rat)  |
| Dermal     | LD50     | 48 mg/kg (mouse)  |
| Inhalative | LC50/4 h | 9980 mg/l (mouse) |

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.

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· **Additional toxicological information:**· **Carcinogenic categories**· **IARC (International Agency for Research on Cancer)**

benzene

I

· **NTP (National Toxicology Program)**

benzene

K

· **OSHA-Ca (Occupational Safety Health Administration) Substance is listed.**

## 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 (Assessment by list): 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**· **DOT, ADR, IMDG, IATA**

UN1114

· **UN proper shipping name**· **DOT**

Benzene

· **ADR**

1114 Benzene

· **IMDG, IATA**

BENZENE

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Trade name: benzene

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· **Transport hazard class(es)**· **DOT**

· **Class** 3 Flammable liquids  
 · **Label** 3

· **ADR, IMDG, IATA**

· **Class** 3 Flammable liquids  
 · **Label** 3

· **Packing group**· **DOT, ADR, IMDG, IATA** II· **Environmental hazards:** Not applicable.· **Special precautions for user** Warning: Flammable liquids· **Danger code (Kemler):** 33· **EMS Number:** 3-03· **Stowage Category** B· **Stowage Code** SW2 Clear of living quarters.

· **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

· **Hazardous substance:** 10 lbs, 4.54 kg· **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 1114 BENZENE, 3, II

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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):** Substance is not listed.
- **Section 313 (Specific toxic chemical listings):** Substance is listed.
- **TSCA (Toxic Substances Control Act):** Substance is listed.
- **Proposition 65**
- **Chemicals known to cause cancer:** Substance is listed.
- **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for males:** Substance is listed.
- **Chemicals known to cause developmental toxicity:** Substance is listed.
- **Carcinogenic categories**

|  |        |
|--|--------|
| · <b>EPA (Environmental Protection Agency)</b> |        |
| benzene  | A, K/L |

|   |    |
|---|----|
| · <b>TLV (Threshold Limit Value established by ACGIH)</b> |    |
| benzene   | AI |

- **NIOSH-Ca (National Institute for Occupational Safety and Health)** Substance is listed.
- **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**



GHS02

GHS07

GHS08

- **Signal word** *Danger*
- **Hazard statements**
  - Highly flammable liquid and vapor.*
  - Causes skin irritation.*
  - Causes serious eye irritation.*
  - May cause genetic defects.*
  - May cause cancer.*
  - Causes damage to organs through prolonged or repeated exposure.*
  - May be fatal if swallowed and enters airways.*
- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. No smoking.*
  - Use explosion-proof electrical/ventilating/lighting/equipment.*
  - Do not breathe dust/fume/gas/mist/vapors/spray.*
  - Wear protective gloves / eye protection / face protection.*
  - Ground/bond container and receiving equipment.*
  - Keep container tightly closed.*
  - Use only non-sparking tools.*
  - Take precautionary measures against static discharge.*
  - Wash thoroughly after handling.*
  - Do not eat, drink or smoke when using this product.*
  - Obtain special instructions before use.*
  - Do not handle until all safety precautions have been read and understood.*
  - IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*

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**Trade name:** benzene

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*Specific treatment (see on this label).*

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

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

*If eye irritation persists: Get medical advice/attention.*

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

*Do NOT induce vomiting.*

*In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.*

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

*Store locked up.*

*Store in a well-ventilated place. Keep cool.*

*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 this hazardous material. 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.*

· **Date of preparation / last revision** 10/03/2016 / -

· **Abbreviations and acronyms:**

*ADR: Accord européen sur le transport 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*

*ACGIH: American Conference of Governmental Industrial Hygienists*

*EINECS: European Inventory of Existing Commercial Chemical Substances*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*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***

***Flam. Liq. 2: Flammable liquids – Category 2***

***Skin Irrit. 2: Skin corrosion/irritation – Category 2***

***Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A***

***Muta. 1B: Germ cell mutagenicity – Category 1B***

***Carc. 1A: Carcinogenicity – Category 1A***

***STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1***

***Asp. Tox. 1: Aspiration hazard – Category 1***

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 03.10.2016

Revision: 03.10.2016

## 1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier**
- **Trade name:** benzene
- **EC number:**  
200-753-7
- **Index number:**  
601-020-00-8
- **Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **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](mailto:info@emsdiasum.com)  
[www.emsdiasum.com](http://www.emsdiasum.com)
- ProSciTech Pty Ltd  
11 Carlton Street, Kirwan QLD 4817 Australia  
Telephone Number: (07) 4773 9444 - 8:30am - 5:00pm, Monday to Friday (excluding Public Holidays)  
Emergency Contact: (07) 4773 9444 - 8:30am - 5:00pm, Monday to Friday (excluding Public Holidays)
- Emgrid Australia Pty. Ltd.  
P.O. Box 118  
The Patch VIC 3792  
Australia  
Tel: 03 9752 1785  
Fax: 03 9752 1784  
Website: [www.emgrid.com.au](http://www.emgrid.com.au)
- **Further information obtainable from:** Product safety department
- **Emergency telephone number:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## 2 Hazards identification

- **Classification of the substance or mixture**



GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.



GHS08 health hazard

Muta. 1B H340 May cause genetic defects.

Carc. 1A H350 May cause cancer.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.

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-AU

# Safety data sheet

according to 1907/2006/EC, Article 31

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Revision: 03.10.2016

Trade name: benzene

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GHS07

*Skin Irrit. 2 H315 Causes skin irritation.*

*Eye Irrit. 2 H319 Causes serious eye irritation.*

· **Label elements**

· **GHS label elements**

*The substance is classified and labelled according to the Globally Harmonised System (GHS).*

· **Hazard pictograms**



GHS02

GHS07

GHS08

· **Signal word** *Danger*

· **Hazard statements**

*Highly flammable liquid and vapour.*

*Causes skin irritation.*

*Causes serious eye irritation.*

*May cause genetic defects.*

*May cause cancer.*

*Causes damage to organs through prolonged or repeated exposure.*

*May be fatal if swallowed and enters airways.*

· **Precautionary statements**

*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*

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

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

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

*Ground/bond container and receiving equipment.*

*Keep container tightly closed.*

*Use only non-sparking tools.*

*Take precautionary measures against static discharge.*

*Wash thoroughly after handling.*

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

*Obtain special instructions before use.*

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

*IF SWALLOWED: Immediately call a POISON CENTER/ doctor.*

*IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*

*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.*

*Continue rinsing.*

*Specific treatment (see on this label).*

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

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

*If eye irritation persists: Get medical advice/attention.*

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

*Do NOT induce vomiting.*

*In case of fire: Use for extinction: CO2, powder or water spray.*

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

*Store locked up.*

*Store in a well-ventilated place. Keep cool.*

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

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# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 03.10.2016

Revision: 03.10.2016

**Trade name:** benzene

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

### 3 Composition/information on ingredients

- **Chemical characterisation: Substances**
- **CAS No. Description**  
benzene
- **Identification number(s)**
- **EC number:** 200-753-7
- **Index number:** 601-020-00-8

### 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:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.
- **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 Firefighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **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:** No special measures required.

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

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

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling** Open and handle receptacle with care.
- **Information about fire - and explosion protection:**  
Keep ignition sources away - Do not smoke.  
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 container 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

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

· **Ingredients with limit values that require monitoring at the workplace:**

**benzene**

WES Long-term value: 3.2 mg/m<sup>3</sup>, 1 ppm

- **Additional information:** The lists valid during the making 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 eyes and skin.
- **Respiratory protection:**  
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
- **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

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· **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.

· **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:**

**Form:** Fluid  
**Colour:** Colourless

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

**Melting point/Melting range:** 6 °C  
**Boiling point/Boiling range:** 80 °C

· **Flash point:** -11 °C· **Flammability (solid, gaseous):** Not applicable.· **Ignition temperature:** 555 °C· **Decomposition temperature:** Not determined.· **Self-igniting:** Not determined.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

· **Explosion limits:**

**Lower:** 1.2 Vol %  
**Upper:** 8 Vol %

· **Vapour pressure at 20 °C:** 100 hPa

· **Density at 20 °C:** 0.88 g/cm<sup>3</sup>  
· **Relative density:** Not determined.  
· **Vapour density:** Not determined.  
· **Evaporation rate:** Not determined.

· **Solubility in / Miscibility with water at 20 °C:** 0.7 g/l

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

**Dynamic at 20 °C:** 0.66 mPas

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- |                          |  |
|--------------------------|--|
| <b>Kinematic:</b>        | Not determined.                            |
| <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 relevant for classification:**

|            |          |                   |
|------------|----------|-------------------|
| Oral       | LD50     | 4894 mg/kg (rat)  |
| Dermal     | LD50     | 48 mg/kg (mouse)  |
| Inhalative | LC50/4 h | 9980 mg/l (mouse) |

- **Primary irritant effect:**
- **Skin corrosion/irritation** Irritant to skin and mucous membranes.
- **Serious eye damage/irritation** Irritating effect.
- **Respiratory or skin sensitisation** No sensitising effects known.
- **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**  
Muta. 1B, Carc. 1A

### 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behaviour 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 (German Regulation) (Assessment by list): 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.

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### 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation**  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

|   |   |
|---|---|
| · <b>UN-Number</b><br>· <b>ADG, IMDG, IATA</b>  | UN1114  |
| · <b>UN proper shipping name</b><br>· <b>ADG</b><br>· <b>IMDG, IATA</b>   | 1114 BENZENE<br>BENZENE   |
| · <b>Transport hazard class(es)</b><br>· <b>ADG, IMDG, IATA</b>   |   |
|   |   |
| · <b>Class</b><br>· <b>Label</b>  | 3 Flammable liquids.<br>3   |
| · <b>Packing group</b><br>· <b>ADG, IMDG, IATA</b>  | II  |
| · <b>Environmental hazards:</b>   | Not applicable.   |
| · <b>Special precautions for user</b><br>· <b>Danger code (Kemler):</b><br>· <b>EMS Number:</b><br>· <b>Stowage Category</b><br>· <b>Stowage Code</b> | Warning: Flammable liquids.<br>33<br>3-03<br>B<br>SW2 Clear of living quarters.                                       |
| · <b>Transport in bulk according to Annex II of Marpol and the IBC Code</b>   | Not applicable.   |
| · <b>Transport/Additional information:</b>  |   |
| · <b>ADG</b><br>· <b>Limited quantities (LQ)</b><br>· <b>Excepted quantities (EQ)</b>   | 1L<br>Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · <b>Transport category</b><br>· <b>Tunnel restriction code</b>   | 2<br>D/E  |
| · <b>IMDG</b><br>· <b>Limited quantities (LQ)</b>   | 1L  |

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|                                   |   |
|-----------------------------------|---|
| · <b>Excepted quantities (EQ)</b> | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · <b>UN "Model Regulation":</b>   | UN 1114 BENZENE, 3, II  |

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Australian Inventory of Chemical Substances** Substance is listed.

- **Standard for the Uniform Scheduling of Medicines and Poisons**

benzene

S7

- **GHS label elements**

The substance is classified and labelled according to the Globally Harmonised System (GHS).

- **Hazard pictograms**



GHS02 GHS07 GHS08

- **Signal word** Danger

- **Hazard statements**

Highly flammable liquid and vapour.

Causes skin irritation.

Causes serious eye irritation.

May cause genetic defects.

May cause cancer.

Causes damage to organs through prolonged or repeated exposure.

May be fatal if swallowed and enters airways.

- **Precautionary statements**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

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

Do not breathe dust/fume/gas/mist/vapours/spray.

Wear protective gloves / eye protection / face protection.

Ground/bond container and receiving equipment.

Keep container tightly closed.

Use only non-sparking tools.

Take precautionary measures against static discharge.

Wash thoroughly after handling.

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

Obtain special instructions before use.

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

IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Specific treatment (see on this label).

IF exposed or concerned: Get medical advice/attention.

If skin irritation occurs: Get medical advice/attention.

If eye irritation persists: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

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*Do NOT induce vomiting.**In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.**Take off contaminated clothing and wash it before reuse.**Store locked up.**Store in a well-ventilated place. Keep cool.**Dispose of contents/container in accordance with local/regional/national/international regulations.*· **Directive 2012/18/EU**· **Named dangerous substances - ANNEX I** Substance is not listed.· **Seveso category P5c** FLAMMABLE LIQUIDS· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t· **National regulations:**· **Information about limitation of use:***Workers are not allowed to be exposed to this hazardous material. 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.*· **Abbreviations and acronyms:***ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)**IMDG: International Maritime Code for Dangerous Goods**IATA: International Air Transport Association**EINECS: European Inventory of Existing Commercial Chemical Substances**CAS: Chemical Abstracts Service (division of the American Chemical Society)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative**Flam. Liq. 2: Flammable liquids – Category 2**Skin Irrit. 2: Skin corrosion/irritation – Category 2**Eye Irrit. 2: Serious eye damage/eye irritation – Category 2**Muta. 1B: Germ cell mutagenicity – Category 1B**Carc. 1A: Carcinogenicity – Category 1A**STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1**Asp. Tox. 1: Aspiration hazard – Category 1*

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Printing date 10/03/2016

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## 1 Identification

- **Product identifier**
- **Trade name:** benzene
- **EC number:**  
200-753-7
- **Index number:**  
601-020-00-8
- **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](mailto:info@emsdiasum.com)  
[www.emsdiasum.com](http://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 - Category 2

H225 Highly flammable liquid and vapour.



GHS08 Health hazard

Germ Cell Mutagenicity - Category 1B

H340 May cause genetic defects.

Carcinogenicity - Category 1A

H350 May cause cancer.

Specific Target Organ Toxicity - Repeated Exposure - Category 1

H372 Causes damage to organs through prolonged or repeated exposure.

Aspiration Hazard - Category 1

H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irritation - Category 2

H315 Causes skin irritation.

Eye Irritation - Category 2A

H319 Causes serious eye irritation.

- **Label elements**

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

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· **Hazard pictograms**

GHS02 GHS07 GHS08

· **Signal word** *Danger*· **Hazard statements***Highly flammable liquid and vapour.**Causes skin irritation.**Causes serious eye irritation.**May cause genetic defects.**May cause cancer.**Causes damage to organs through prolonged or repeated exposure.**May be fatal if swallowed and enters airways.*· **Precautionary statements***Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.**Use explosion-proof [electrical/ventilating/lighting] equipment.**Do not breathe dust/fume/gas/mist/vapours/spray.**Wear protective gloves/protective clothing/eye protection/face protection.**Ground and bond container and receiving equipment.**Keep container tightly closed.**Use non-sparking tools.**Take actions to prevent static discharges.**Wash thoroughly after handling.**Do not eat, drink or smoke when using this product.**Obtain special instructions before use.**Do not handle until all safety precautions have been read and understood.**IF SWALLOWED: Immediately call a POISON CENTER/ doctor.**IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].**IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.**Continue rinsing.**Specific treatment (see on this label).**IF exposed or concerned: Get medical advice/attention.**If eye irritation persists: Get medical advice/attention.**Get medical advice/attention if you feel unwell.**Do NOT induce vomiting.**In case of fire: Use for extinction: CO2, powder or water spray.**Take off contaminated clothing and wash it before reuse.**Store locked up.**Store in a well-ventilated place. Keep cool.**Dispose of contents/container in accordance with local/regional/national/international regulations.*· **Hazard description:**· **WHMIS-symbols:***B2 - Flammable liquid**D1A - Very toxic material causing immediate and serious toxic effects**D2A - Very toxic material causing other toxic effects*

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- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



### 3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**  
benzene
- **Identification number(s)**
- **EC number:** 200-753-7
- **Index number:** 601-020-00-8

### 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:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.
- **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:**  
CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **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:** No special measures required.

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## 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.
- **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

- **Handling:**
- **Precautions for safe handling** Open and handle receptacle with care.
- **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:**
- **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

- **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:**

### benzene

|    |   |
|----|---|
| EL | Short-term value: 2.5 ppm<br>Long-term value: 0.5 ppm<br>Skin; ACGIH A1; IARC 1 |
| EV | Short-term value: 2.5 ppm<br>Long-term value: 0.5 ppm<br>Skin                   |

- **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.

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Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **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>           | Fluid           |
| <b>Color:</b>          | Colorless       |
| <b>Odor:</b>           | Aromatic        |
| <b>Odor threshold:</b> | Not determined. |

· **pH-value:** Not determined.

· **Change in condition**

|                                     |       |
|-------------------------------------|-------|
| <b>Melting point/Melting range:</b> | 6 °C  |
| <b>Boiling point/Boiling range:</b> | 80 °C |

· **Flash point:** -11 °C

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

· **Ignition temperature:** 555 °C

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Not determined.

· **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

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- |   |                 |
|---|-----------------|
| · <b>Explosion limits:</b>  |                 |
| Lower:  | 1.2 Vol %       |
| Upper:  | 8 Vol %         |
| · <b>Vapor pressure at 20 °C:</b> 100 hPa                             |                 |
| · <b>Density at 20 °C:</b> 0.88 g/cm <sup>3</sup>                     |                 |
| · <b>Relative density</b> Not determined.                             |                 |
| · <b>Vapor density</b> Not determined.                                |                 |
| · <b>Evaporation rate</b> Not determined.                             |                 |
| · <b>Solubility in / Miscibility with Water at 20 °C:</b> 0.7 g/l     |                 |
| · <b>Partition coefficient (n-octanol/water):</b> Not determined.     |                 |
| · <b>Viscosity:</b>   |                 |
| Dynamic at 20 °C:   | 0.66 mPas       |
| Kinematic:  | Not determined. |
| · <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:**

|            |          |                   |
|------------|----------|-------------------|
| Oral       | LD50     | 4894 mg/kg (rat)  |
| Dermal     | LD50     | 48 mg/kg (mouse)  |
| Inhalative | LC50/4 h | 9980 mg/l (mouse) |

- **Primary irritant effect:**
- **on the skin:** Irritant to skin and mucous membranes.
- **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**

- **Carcinogenic categories**

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

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· **NTP (National Toxicology Program)**

benzene

K


## 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 (Assessment by list): 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

- |   |                     |
|---|---------------------|
| · <b>UN-Number</b>  | UN1114              |
| · <b>DOT, TDG, IMDG, IATA</b>   |                     |
| · <b>UN proper shipping name</b>  | Benzene             |
| · <b>DOT</b>  | 1114 Benzene        |
| · <b>TDG</b>  | 1114 Benzene        |
| · <b>IMDG, IATA</b>   | BENZENE             |
| · <b>Transport hazard class(es)</b>   |                     |
| · <b>DOT</b>  |                     |
|  |                     |
| · <b>Class</b>  | 3 Flammable liquids |

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- **Label** 3
- **TDG, IMDG, IATA**



- **Class** 3 Flammable liquids
- **Label** 3

- **Packing group**
- **DOT, TDG, IMDG, IATA** II

- **Environmental hazards:** Not applicable.

- **Special precautions for user** Warning: Flammable liquids
- **Danger code (Kemler):** 33
- **EMS Number:** 3-03
- **Stowage Category** B
- **Stowage Code** SW2 Clear of living quarters.

- **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
- **Hazardous substance:** 10 lbs, 4.54 kg

- **TDG**
- **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 1114 BENZENE, 3, II

## 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
- **Section 355 (extremely hazardous substances):** Substance is not listed.
- **Section 313 (Specific toxic chemical listings):** Substance is listed.
- **TSCA (Toxic Substances Control Act):** Substance is listed.
- **Canadian substance listings:**
- **Canadian Domestic Substances List (DSL)** Substance is listed.
- **Canadian Ingredient Disclosure list (limit 0.1%)** Substance is listed.
- **Canadian Ingredient Disclosure list (limit 1%)** Substance is not listed.
- **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).

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CA

# Safety Data Sheet

acc. to OSHA HCS

Printing date 10/03/2016

Reviewed on 10/03/2016

Trade name: benzene

(Contd. of page 8)

· **Hazard pictograms**

GHS02   GHS07   GHS08

· **Signal word** *Danger*· **Hazard statements***Highly flammable liquid and vapour.**Causes skin irritation.**Causes serious eye irritation.**May cause genetic defects.**May cause cancer.**Causes damage to organs through prolonged or repeated exposure.**May be fatal if swallowed and enters airways.*· **Precautionary statements***Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.**Use explosion-proof [electrical/ventilating/lighting] equipment.**Do not breathe dust/fume/gas/mist/vapours/spray.**Wear protective gloves/protective clothing/eye protection/face protection.**Ground and bond container and receiving equipment.**Keep container tightly closed.**Use non-sparking tools.**Take actions to prevent static discharges.**Wash thoroughly after handling.**Do not eat, drink or smoke when using this product.**Obtain special instructions before use.**Do not handle until all safety precautions have been read and understood.**IF SWALLOWED: Immediately call a POISON CENTER/ doctor.**IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].**IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.**Continue rinsing.**Specific treatment (see on this label).**IF exposed or concerned: Get medical advice/attention.**If eye irritation persists: Get medical advice/attention.**Get medical advice/attention if you feel unwell.**Do NOT induce vomiting.**In case of fire: Use for extinction: CO<sub>2</sub>, powder or water spray.**Take off contaminated clothing and wash it before reuse.**Store locked up.**Store in a well-ventilated place. Keep cool.**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 this hazardous material. Exceptions can be made by the authorities in certain cases.*· **Chemical safety assessment:** *A Chemical Safety Assessment has not been carried out.*

CA

(Contd. on page 10)

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

Printing date 10/03/2016

Reviewed on 10/03/2016

**Trade name: benzene**

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**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.*

· **Date of preparation / last revision** 10/03/2016 / -

· **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*

*CAS: Chemical Abstracts Service (division of the American Chemical Society)*

*NFPA: National Fire Protection Association (USA)*

*HMIS: Hazardous Materials Identification System (USA)*

*WHMIS: Workplace Hazardous Materials Information System (Canada)*

*LC50: Lethal concentration, 50 percent*

*LD50: Lethal dose, 50 percent*

*PBT: Persistent, Bioaccumulative and Toxic*

*vPvB: very Persistent and very Bioaccumulative*

CA

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 03.10.2016

Revision: 03.10.2016

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name:** benzene
- **EC number:**  
200-753-7
- **Index number:**  
601-020-00-8
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture** Laboratory chemicals
- **1.3 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
- **Further information obtainable from:** Product safety department
- **1.4 Emergency telephone number:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

### SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.



GHS08 health hazard

Muta. 1B H340 May cause genetic defects.

Carc. 1A H350 May cause cancer.

STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2 H319 Causes serious eye irritation.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**  
The substance is classified and labelled according to the CLP regulation.

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GB

# Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 03.10.2016

Revision: 03.10.2016

Trade name: benzene

(Contd. of page 1)

## · Hazard pictograms



GHS02   GHS07   GHS08

· Signal word *Danger*

## · Hazard statements

*H225 Highly flammable liquid and vapour.**H315 Causes skin irritation.**H319 Causes serious eye irritation.**H340 May cause genetic defects.**H350 May cause cancer.**H372 Causes damage to organs through prolonged or repeated exposure.**H304 May be fatal if swallowed and enters airways.*

## · Precautionary statements

*P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.**P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/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.**P321 Specific treatment (see on this label).**P405 Store locked up.**P501 Dispose of contents/container in accordance with local/regional/national/international regulations.*

## · 2.3 Other hazards

## · Results of PBT and vPvB assessment

· **PBT:** Not applicable.· **vPvB:** Not applicable.

## SECTION 3: Composition/information on ingredients

## · 3.1 Chemical characterisation: Substances

## · CAS No. Description

*benzene*

## · Identification number(s)

· **EC number:** 200-753-7· **Index number:** 601-020-00-8

## SECTION 4: First aid measures

## · 4.1 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:** *In case of unconsciousness place patient stably in side position for transportation.*· **After skin contact:** *Immediately wash with water and soap and rinse thoroughly.*· **After eye contact:***Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.*· **After swallowing:** *If symptoms persist consult doctor.*· **4.2 Most important symptoms and effects, both acute and delayed** *No further relevant information available.*

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**Safety data sheet**  
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Revision: 03.10.2016

**Trade name:** benzene

(Contd. of page 2)

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

### **SECTION 5: Firefighting measures**

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture** No further relevant information available.
- **5.3 Advice for firefighters**
- **Protective equipment:** No special measures required.

### **SECTION 6: Accidental release measures**

- **6.1 Personal precautions, protective equipment and emergency procedures**  
Wear protective equipment. Keep unprotected persons away.
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 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.
- **6.4 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.

### **SECTION 7: Handling and storage**

- **7.1 Precautions for safe handling** Open and handle receptacle with care.
- **Information about fire - and explosion protection:**  
Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.  
Keep respiratory protective device available.
- **7.2 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 container tightly sealed.  
Store in cool, dry conditions in well sealed receptacles.
- **7.3 Specific end use(s)** No further relevant information available.

### **SECTION 8: Exposure controls/personal protection**

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

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GB



# Safety data sheet

according to 1907/2006/EC, Article 31

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Revision: 03.10.2016

**Trade name:** benzene

(Contd. of page 3)

**· 8.1 Control parameters****· Ingredients with limit values that require monitoring at the workplace:****benzene**

|     |   |
|-----|---|
| WEL | Long-term value: 3.25 mg/m <sup>3</sup> , 1 ppm |
|     | Carc; Sk  |

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

**· 8.2 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 eyes and skin.

**· Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

**· 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.

**· 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

## SECTION 9: Physical and chemical properties

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

|                |            |
|----------------|------------|
| <b>Form:</b>   | Fluid      |
| <b>Colour:</b> | Colourless |

|                 |          |
|-----------------|----------|
| <b>· Odour:</b> | Aromatic |
|-----------------|----------|

|                           |                 |
|---------------------------|-----------------|
| <b>· Odour threshold:</b> | Not determined. |
|---------------------------|-----------------|

|                    |                 |
|--------------------|-----------------|
| <b>· pH-value:</b> | Not determined. |
|--------------------|-----------------|

(Contd. on page 5)

**Safety data sheet**  
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Revision: 03.10.2016

Trade name: benzene

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|   |   |
|---|---|
| · <b>Change in condition</b>                              |   |
| Melting point/Melting range:                              | 6 °C  |
| Boiling point/Boiling range:                              | 80 °C   |
| · <b>Flash point:</b>                                     | -11 °C  |
| · <b>Flammability (solid, gaseous):</b>                   | Not applicable.   |
| · <b>Ignition temperature:</b>                            | 555 °C  |
| · <b>Decomposition temperature:</b>                       | Not determined.   |
| · <b>Self-igniting:</b>                                   | Not determined.   |
| · <b>Danger of explosion:</b>                             | Product is not explosive. However, formation of explosive air/vapour mixtures are possible. |
| · <b>Explosion limits:</b>                                |   |
| Lower:  | 1.2 Vol %   |
| Upper:  | 8 Vol %   |
| · <b>Vapour pressure at 20 °C:</b>                        | 100 hPa   |
| · <b>Density at 20 °C:</b>                                | 0.88 g/cm <sup>3</sup>  |
| · <b>Relative density</b>                                 | Not determined.   |
| · <b>Vapour density</b>                                   | Not determined.   |
| · <b>Evaporation rate</b>                                 | Not determined.   |
| · <b>Solubility in / Miscibility with water at 20 °C:</b> | 0.7 g/l   |
| · <b>Partition coefficient (n-octanol/water):</b>         | Not determined.   |
| · <b>Viscosity:</b>                                       |   |
| Dynamic at 20 °C:   | 0.66 mPas   |
| Kinematic:  | Not determined.   |
| · <b>9.2 Other information</b>                            | No further relevant information available.  |

### SECTION 10: Stability and reactivity

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

### SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity** Based on available data, the classification criteria are not met.

#### · LD/LC50 values relevant for classification:

|            |          |                   |
|------------|----------|-------------------|
| Oral       | LD50     | 4894 mg/kg (rat)  |
| Dermal     | LD50     | 48 mg/kg (mouse)  |
| Inhalative | LC50/4 h | 9980 mg/l (mouse) |

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GB

# Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 03.10.2016

Revision: 03.10.2016

**Trade name:** benzene

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- **Primary irritant effect:**
- **Skin corrosion/irritation**  
Causes skin irritation.
- **Serious eye damage/irritation**  
Causes serious eye irritation.
- **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity**  
May cause genetic defects.
- **Carcinogenicity**  
May cause cancer.
- **Reproductive toxicity** Based on available data, the classification criteria are not met.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure**  
Causes damage to organs through prolonged or repeated exposure.
- **Aspiration hazard**  
May be fatal if swallowed and enters airways.

## SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**  
Water hazard class 3 (German Regulation) (Assessment by list): 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.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

## SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**  
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

## SECTION 14: Transport information

- |                                       |              |
|---------------------------------------|--------------|
| · <b>14.1 UN-Number</b>               |              |
| · <b>ADR, IMDG, IATA</b>              | UN1114       |
| · <b>14.2 UN proper shipping name</b> |              |
| · <b>ADR</b>                          | 1114 BENZENE |

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**Safety data sheet**  
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Trade name: benzene

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|   |   |
|---|---|
| · <b>IMDG, IATA</b>   | <b>BENZENE</b>  |
| · <b>14.3 Transport hazard class(es)</b>  |   |
| · <b>ADR, IMDG, IATA</b>  |   |
|  |   |
| · <b>Class</b>  | 3 Flammable liquids.  |
| · <b>Label</b>  | 3   |
| · <b>14.4 Packing group</b>   |   |
| · <b>ADR, IMDG, IATA</b>  | II  |
| · <b>14.5 Environmental hazards:</b>  | Not applicable.   |
| · <b>14.6 Special precautions for user</b>  | Warning: Flammable liquids.   |
| · <b>Danger code (Kemler):</b>  | 33  |
| · <b>EMS Number:</b>  | 3-03  |
| · <b>Stowage Category</b>   | B   |
| · <b>Stowage Code</b>   | SW2 Clear of living quarters.   |
| · <b>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</b>  | Not applicable.   |
| · <b>Transport/Additional information:</b>  |   |
| · <b>ADR</b>  |   |
| · <b>Limited quantities (LQ)</b>  | 1L  |
| · <b>Excepted quantities (EQ)</b>   | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · <b>Transport category</b>   | 2   |
| · <b>Tunnel restriction code</b>  | D/E   |
| · <b>IMDG</b>   |   |
| · <b>Limited quantities (LQ)</b>  | 1L  |
| · <b>Excepted quantities (EQ)</b>   | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · <b>UN "Model Regulation":</b>   | UN 1114 BENZENE, 3, II  |

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **Seveso category P5c FLAMMABLE LIQUIDS**
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 5, 28, 29, 40

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GB

**Safety data sheet**  
according to 1907/2006/EC, Article 31

Printing date 03.10.2016

Revision: 03.10.2016

**Trade name: benzene**

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· **National regulations:**· **Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

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

### **SECTION 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.

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Flammable liquids – Category 2

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Irrit. 2: Serious eye damage/eye irritation – Category 2

Muta. 1B: Germ cell mutagenicity – Category 1B

Carc. 1A: Carcinogenicity – Category 1A

STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

Asp. Tox. 1: Aspiration hazard – Category 1

# Veiligheidsinformatieblad

volgens 1907/2006/EG, Artikel 31

datum van de druk: 03.10.2016

Herziening van: 03.10.2016

## RUBRIEK 1: Identificatie van de stof of het mengsel en van de vennootschap/onderneming

### · 1.1 Productidentificatie

· **Handelsnaam:** benzene

· **EC-nummer:**  
200-753-7

· **Catalogusnummer:**  
601-020-00-8

### · 1.2 Relevant geïdentificeerd gebruik van de stof of het mengsel en ontraden gebruik

Geen verdere relevante informatie verkrijgbaar.

· **Toepassing van de stof / van de bereiding** Laboratoriumchemicaliën

### · 1.3 Details betreffende de verstreker van het veiligheidsinformatieblad

#### · **Fabrikant/leverancier:**

Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: [info@emsdiasum.com](mailto:info@emsdiasum.com)  
[www.emsdiasum.com](http://www.emsdiasum.com)

Aurion  
Binnenhaven 5  
6709 PD Wageningen  
The Netherlands  
Tel: 31 317 415094  
Fax: 31 317 415955  
email: [info@aurion.nl](mailto:info@aurion.nl)

· **Inlichtingengevende sector:** Product safety department

### · 1.4 Telefoonnummer voor noodgevallen:

ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## RUBRIEK 2: Identificatie van de gevaren

### · 2.1 Indeling van de stof of het mengsel

· **Indeling overeenkomstig Verordening (EG) nr. 1272/2008**



GHS02 vlam

Flam. Liq. 2 H225 Licht ontvlambare vloeistof en damp.



GHS08 gezondheidsgevaar

Muta. 1B H340 Kan genetische schade veroorzaken.

Carc. 1A H350 Kan kanker veroorzaken.

STOT RE 1 H372 Veroorzaakt schade aan organen bij langdurige of herhaalde blootstelling.

Asp. Tox. 1 H304 Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terechtkomt.



GHS07

Skin Irrit. 2 H315 Veroorzaakt huidirritatie.

(Vervolg op blz. 2)

# Veiligheidsinformatieblad

## volgens 1907/2006/EG, Artikel 31

datum van de druk: 03.10.2016

Herziening van: 03.10.2016

**Handelsnaam: benzene**

(Vervolg van blz. 1)

*Eye Irrit. 2 H319 Veroorzaakt ernstige oogirritatie.*

- **2.2 Etiketteringselementen**
- **Etikettering overeenkomstig Verordening (EG) nr. 1272/2008**  
*De stof product is geclassificeerd en geëtiketteerd volgens de CLP-verordening.*
- **Gevarenpictogrammen**



GHS02 GHS07 GHS08

- **Signaalwoord Gevaar**
- **Gevarenaanduidingen**  
*H225 Licht ontvlambare vloeistof en damp.*  
*H315 Veroorzaakt huidirritatie.*  
*H319 Veroorzaakt ernstige oogirritatie.*  
*H340 Kan genetische schade veroorzaken.*  
*H350 Kan kanker veroorzaken.*  
*H372 Veroorzaakt schade aan organen bij langdurige of herhaalde blootstelling.*  
*H304 Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terecht komt.*
- **Veiligheidsaanbevelingen**  
*P301+P310 NA INSLIKKEN: onmiddellijk een ANTIGIFCENTRUM/arts raadplegen.*  
*P303+P361+P353 BIJ CONTACT MET DE HUID (of het haar): verontreinigde kleding onmiddellijk uittrekken. Huid met water afspoelen/afdouchen.*  
*P305+P351+P338 BIJ CONTACT MET DE OGEN: voorzichtig afspoelen met water gedurende een aantal minuten; contactlenzen verwijderen, indien mogelijk; blijven spoelen.*  
*P321 Specifieke behandeling vereist (zie op dit etiket).*  
*P405 Achter slot bewaren.*  
*P501 De inhoud en de verpakking verwerken volgens de plaatselijke/regionale/nationale/internationale voorschriften.*
- **2.3 Andere gevaren**
- **Resultaten van PBT- en zPzB-beoordeling**
- **PBT: Niet bruikbaar.**
- **zPzB: Niet bruikbaar.**

### RUBRIEK 3: Samenstelling en informatie over de bestanddelen

- **3.1 Chemische karakterisering: Stoffen**
- **CAS-Nr. omschrijving**  
*benzene*
- **Identificatienummer(s)**
- **EC-nummer: 200-753-7**
- **Catalogusnummer: 601-020-00-8**

### RUBRIEK 4: Eerstehulpmaatregelen

- **4.1 Beschrijving van de eerstehulpmaatregelen**
- **Algemene informatie:**  
*Het is mogelijk dat vergiftigingssymptomen pas na vele uren optreden. Om deze reden is medische controle gedurende minstens 48 uur na een ongeval noodzakelijk.*
- **Na het inademen:** *Bij bewusteloosheid ligging en vervoer in stabiele zijligging.*
- **Na huidcontact:** *Onmiddellijk met water en zeep afwassen en goed naspoelen.*

(Vervolg op blz. 3)

# Veiligheidsinformatieblad

## volgens 1907/2006/EG, Artikel 31

datum van de druk: 03.10.2016

Herziening van: 03.10.2016

**Handelsnaam: benzene**

(Vervolg van blz. 2)

- **Na oogcontact:**  
De ogen gedurende verscheidene minuten onder stromend water afspoelen terwijl de oogspleet geopend blijft. Bij aanhoudende klachten een dokter raadplegen.
- **Na inslikken:** Als de klachten niet minderen, een arts raadplegen
- **4.2 Belangrijkste acute en uitgestelde symptomen en effecten** Geen verdere relevante informatie verkrijgbaar.
- **4.3 Vermelding van de vereiste onmiddellijke medische verzorging en speciale behandeling**  
Geen verdere relevante informatie verkrijgbaar.

### RUBRIEK 5: Brandbestrijdingsmaatregelen

- **5.1 Blusmiddelen**
- **Geschikte blusmiddelen:**  
CO<sub>2</sub>, bluspoeder of waterstraal. Grotere brand met waterstraal bestrijden of met schuim, dat tegen alcohol bestand is.
- **Blusmiddelen die uit veiligheidsoogpunt niet geschikt zijn:** Krachtige waterstraal
- **5.2 Speciale gevaren die door de stof of het mengsel worden veroorzaakt**  
Geen verdere relevante informatie verkrijgbaar.
- **5.3 Advies voor brandweerlieden**
- **Speciale beschermende kleding:** Geen bijzondere maatregelen nodig.

### RUBRIEK 6: Maatregelen bij het accidenteel vrijkomen van de stof of het mengsel

- **6.1 Persoonlijke voorzorgsmaatregelen, beschermde uitrusting en noodprocedures**  
Beschermende kleding aantrekken. Niet beschermde personen op afstand houden.
- **6.2 Milieuvoorzorgsmaatregelen:** Niet in de riolering/het oppervlaktewater/het grondwater laten terechtkomen.
- **6.3 Insluutings- en reinigingsmethoden en -materiaal:**  
Met vloeistofbindend materiaal (zand, bergmeel, zuurbinder, universele binder, zaagmeel) opnemen.  
Besmet materiaal zoals afval volgens punt 13 verwijderen.  
Voor voldoende ventilatie zorgen.
- **6.4 Verwijzing naar andere rubrieken**  
Informatie inzake veilig gebruik - zie hoofdstuk 7.  
Informatie inzake persoonlijke beschermingsuitrusting - zie hoofdstuk 8.  
Informatie inzake berging - zie hoofdstuk 13.

### RUBRIEK 7: Hantering en opslag

- **7.1 Voorzorgsmaatregelen voor het veilig hanteren van de stof of het mengsel**  
Tanks voorzichtig openen en behandelen.
- **Informatie m.b.t. brand- en ontploffingsgevaar:**  
Onststekingsbronnen op afstand houden - niet roken.  
Maatregelen treffen tegen ontlading van statische elektriciteit.  
Ademhalingsstoestellen gereedhouden.
- **7.2 Voorwaarden voor een veilige opslag, met inbegrip van incompatibele producten**
- **Opslag:**
- **Eisen ten opzichte van opslagruimte en tanks:** Op een koele plaats bewaren.
- **Informatie m.b.t. gezamenlijke opslag:** Niet noodzakelijk.
- **Verdere inlichtingen over eisen m.b.t. de opslag:**  
Tanks ondoordringbaar gesloten houden.  
Koel en droog bewaren in goed gesloten vaten.

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· **7.3 Specifiek eindgebruik** Geen verdere relevante informatie verkrijgbaar.

## RUBRIEK 8: Maatregelen ter beheersing van blootstelling/persoonlijke bescherming

· **Aanvullende gegevens m.b.t. de inrichting van technische installaties:** Geen aanvullende gegevens. Zie 7.· **8.1 Controleparameters**· **Bestanddelen met grenswaarden die m.b.t. de werkruimte in acht genomen moeten worden:****benzene**

|     |  |
|-----|--|
| WGW | Lange termijn waarde: 3,25 0,7* mg/m <sup>3</sup> , 1 ppm<br>*Advies Gr. |
|-----|--|

· **Aanvullende gegevens:** Als basis dienden lijsten die bij opstelling geldig waren.· **8.2 Maatregelen ter beheersing van blootstelling**· **Persoonlijke beschermingsvoorzieningen:**· **Algemene beschermings- en gezondheidsmaatregelen:**

- Verwijderd houden van eet- en drinkwaren.
- Verontreinigde kleding onmiddellijk uittrekken.
- Vóór de pauze en aan het einde van werktijd handen wassen.
- Beschermende kleding afzonderlijk bewaren.
- Aanraking met de ogen en de huid vermijden.

· **Ademhalingsbescherming:**

Bij korte of geringe belasting ademfiltertoestel; bij intensieve resp. langdurige expositie een van de omringende lucht onafhankelijk ademhalingsstoestel gebruiken.

· **Handbescherming:**

Veiligheidshandschoenen

Het handschoenmateriaal moet ondoorlatend en bestand zijn tegen het product / de stof / de bereiding.  
Op grond van falende testen kan geen aanbeveling voor handschoenmateriaal voor het product / de bereiding / het chemicaliën-mengsel afgegeven worden.  
Kies handschoenmateriaal rekening houdend met de penetratietijden, de permeatiegraden en de degradatie.

· **Handschoenmateriaal**

De keuze van een geschikte handschoen is niet alleen afhankelijk van het materiaal, maar ook van andere kwaliteitskenmerken en verschilt van fabrikant tot fabrikant.

· **Doordringingstijd van het handschoenmateriaal**

De precieze penetratietijd kunt u te weten komen bij de handschoenfabrikant; houd er rekening mee.

· **Oogbescherming:**

Nauw aansluitende veiligheidsbril

## RUBRIEK 9: Fysische en chemische eigenschappen

· **9.1 Informatie over fysische en chemische basiseigenschappen**· **Algemene gegevens**· **Voorkomen:**

Vorm: Vloeibaar

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|   |  |
|---|--|
| <b>Kleur:</b>   | Kleurloos  |
| · <b>Reuk:</b>  | Aromatisch   |
| · <b>Geurdrempelwaarde:</b>                                 | Niet bepaald.  |
| · <b>pH-waarde:</b>   | Niet bepaald.  |
| · <b>Toestandsverandering</b>                               |  |
| <b>Smeltpunt/smeltbereik:</b>                               | 6 °C   |
| <b>Kookpunt/kookpuntbereik:</b>                             | 80 °C  |
| · <b>Vlampunt:</b>  | -11 °C   |
| · <b>Ontvlambaarheid (vast, gasvormig):</b>                 | Niet bruikbaar.  |
| · <b>Ontstekingstemperatuur:</b>                            | 555 °C   |
| · <b>Ontbindingstemperatuur:</b>                            | Niet bepaald.  |
| · <b>Zelfonsteking:</b>                                     | Niet bepaald.  |
| · <b>Ontploffingsgevaar:</b>                                | Het produkt is niet ontploffingsgevaarlijk, maar de vorming van ontploffingsgevaarlijke damp-/luchtmengsels is mogelijk. |
| · <b>Ontploffingsgrenzen:</b>                               |  |
| <b>Onderste:</b>  | 1,2 Vol %  |
| <b>Bovenste:</b>  | 8 Vol %  |
| · <b>Dampspanning bij 20 °C:</b>                            | 100 hPa  |
| · <b>Dichtheid bij 20 °C:</b>                               | 0,88 g/cm <sup>3</sup>   |
| · <b>Relatieve dichtheid</b>                                | Niet bepaald.  |
| · <b>Dampdichtheid</b>                                      | Niet bepaald.  |
| · <b>Verdampingssnelheid</b>                                | Niet bepaald.  |
| · <b>Oplosbaarheid in/mengbaarheid met Water bij 20 °C:</b> | 0,7 g/l  |
| · <b>Verdelingscoëfficiënt (n-octanol/water):</b>           | Niet bepaald.  |
| · <b>Viscositeit</b>  |  |
| <b>Dynamisch bij 20 °C:</b>                                 | 0,66 mPas  |
| <b>Kinematisch:</b>   | Niet bepaald.  |
| · <b>9.2 Overige informatie</b>                             | Geen verdere relevante informatie verkrijgbaar.  |

### RUBRIEK 10: Stabiliteit en reactiviteit

- **10.1 Reactiviteit** Geen verdere relevante informatie verkrijgbaar.
- **10.2 Chemische stabiliteit**
- **Thermische afbraak / te vermijden omstandigheden:** Geen afbraak bij gebruik volgens voorschrift.
- **10.3 Mogelijke gevaarlijke reacties** Geen gevaarlijke reacties bekend.
- **10.4 Te vermijden omstandigheden** Geen verdere relevante informatie verkrijgbaar.
- **10.5 Chemisch op elkaar inwerkende materialen:** Geen verdere relevante informatie verkrijgbaar.
- **10.6 Gevaarlijke ontledingsproducten:** Geen gevaarlijke ontbindingsproducten bekend.

### RUBRIEK 11: Toxicologische informatie

- **11.1 Informatie over toxicologische effecten**
- **Acute toxiciteit** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.

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**Indelingsrelevantie LD/LC50-waarden:**

|            |          |                   |
|------------|----------|-------------------|
| Oraal      | LD50     | 4894 mg/kg (rat)  |
| Dermaal    | LD50     | 48 mg/kg (mouse)  |
| Inhalatief | LC50/4 h | 9980 mg/l (mouse) |

- **Primaire aandoening:**
- **Huidcorrosie/-irritatie**  
Veroorzaakt huidirritatie.
- **Ernstig oogletsel/oogirritatie**  
Veroorzaakt ernstige oogirritatie.
- **Sensibilisatie van de luchtwegen/de huid**  
Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **CMR-effecten (kankerverwekkendheid, mutageniteit en giftigheid voor de voortplanting)**
- **Mutageniteit in geslachtscellen**  
Kan genetische schade veroorzaken.
- **Kankerverwekkendheid**  
Kan kanker veroorzaken.
- **Giftigheid voor de voortplanting** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **STOT bij eenmalige blootstelling** Gebaseerd op beschikbare gegevens; aan de indelingscriteria is niet voldaan.
- **STOT bij herhaalde blootstelling**  
Veroorzaakt schade aan organen bij langdurige of herhaalde blootstelling.
- **Gevaar bij inademing**  
Kan dodelijk zijn als de stof bij inslikken in de luchtwegen terecht komt.

### RUBRIEK 12: Ecologische informatie

- **12.1 Toxiciteit**
- **Aquatische toxiciteit:** Geen verdere relevante informatie verkrijgbaar.
- **12.2 Persistentie en afbreekbaarheid** Geen verdere relevante informatie verkrijgbaar.
- **12.3 Bioaccumulatie** Geen verdere relevante informatie verkrijgbaar.
- **12.4 Mobiliteit in de bodem** Geen verdere relevante informatie verkrijgbaar.
- **Verdere ecologische informatie:**
- **Algemene informatie:**  
Waterbezwaarlijkheid (NL) 1: Zwarte lijst-stof (76/464/EEG).  
Gevaar voor water klasse 3 (D) (Lijstclassificatie): gevaar voor water groot  
Niet lozen in grondwater, oppervlaktewater of riolering, ook niet in kleine hoeveelheden.  
Gevaar voor drinkwater zelfs bij het uitlopen van zeer geringe hoeveelheden in de ondergrond.
- **12.5 Resultaten van PBT- en zPzB-beoordeling**
- **PBT:** Niet bruikbaar.
- **zPzB:** Niet bruikbaar.
- **12.6 Andere schadelijke effecten** Geen verdere relevante informatie verkrijgbaar.

### RUBRIEK 13: Instructies voor verwijdering

- **13.1 Afvalverwerkingsmethoden**
- **Aanbeveling:** Mag niet tesamen met huisvuil gestort worden of in de riolering terechtkomen.
- **Niet gereinigde verpakkingen:**
- **Aanbeveling:** Afvalverwijdering volgens overheidsbepalingen.

NL

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## RUBRIEK 14: Informatie met betrekking tot het vervoer

|  |   |
|--|---|
| · 14.1 VN-nummer<br>· ADR, IMDG, IATA  | UN1114  |
| · 14.2 Juiste ladingnaam overeenkomstig de modelreglementen van de VN<br>· ADR<br>· IMDG, IATA                             | 1114 BENZEEN<br>BENZENE   |
| · 14.3 Transportgevarenklasse(n)<br>· ADR, IMDG, IATA  |   |
|   |   |
| · klasse<br>· Etiket   | 3 Brandbare vloeistoffen<br>3   |
| · 14.4 Verpakkingsgroep:<br>· ADR, IMDG, IATA  | II  |
| · 14.5 Milieugevaren:  | Niet bruikbaar.   |
| · 14.6 Bijzondere voorzorgen voor de gebruiker<br>· Kemler-getal:<br>· EMS-nummer:<br>· Stowage Category<br>· Stowage Code | Waarschuwing: Brandbare vloeistoffen<br>33<br>3-03<br>B<br>SW2 Clear of living quarters.  |
| · 14.7 Vervoer in bulk overeenkomstig bijlage II bij Marpol en de IBC-code   | Niet bruikbaar.   |
| · Transport/verdere gegevens:  |   |
| · ADR<br>· Beperkte hoeveelheden (LQ)<br>· Uitgezonderde hoeveelheden (EQ)   | 1L<br>Code: E2<br>Grootste netto hoeveelheid per binnenverpakking: 30 ml<br>Grootste netto hoeveelheid per buitenverpakking: 500 ml |
| · Vervoerscategorie<br>· Tunnelbeperkingscode  | 2<br>D/E  |
| · IMDG<br>· Limited quantities (LQ)<br>· Excepted quantities (EQ)  | 1L<br>Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml               |
| · VN "Model Regulation":   | UN 1114 BENZEEN, 3, II  |

## RUBRIEK 15: Regelgeving

- 15.1 Specifieke veiligheids-, gezondheids- en milieureglementen en -wetgeving voor de stof of het mengsel
- SZW-lijst van kankerverwekkende stoffen De stof is aanwezig.
- SZW-lijst van mutagene stoffen De stof is aanwezig.
- NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Vruchtbaarheid De stof is niet aanwezig.
- NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Ontwikkeling De stof is niet aanwezig.

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- **NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Borstvoeding** De stof is niet aanwezig.
- **Richtlijn 2012/18/EU**
- **Gevaarlijke stoffen die met naam genoemd worden - BIJLAGE I** De stof is niet aanwezig.
- **Seveso-categorie P5c ONTVLAMBARE VLOEISTOFFEN**
- **Drempelwaarde (ton) voor toepassing van voorschriften voor lagedrempelinrichtingen** 5.000 t
- **Drempelwaarde (ton) voor toepassing van voorschriften voor hogedrempelinrichtingen** 50.000 t
- **Verordening (EG) nr. 1907/2006 BIJLAGE XVII** Beperkingsvoorwaarden: 3, 5, 28, 29, 40
- **Nationale voorschriften:**
- **Aanwijzingen m.b.t. tewerkstellingsbeperking:**  
Werknemers mogen aan deze gevaarlijke stof niet blootgesteld worden. In uitzonderingsgevallen kan de overheid speciale vergunningen afgeven.
- **Gevaarklasse v. water:** Waterbezwaarlijkheid (NL) 1: Saneringsinspanning A
- **15.2 Chemischeveiligheidsbeoordeling:** Een chemische veiligheidsbeoordeling is niet uitgevoerd.

### RUBRIEK 16: Overige informatie

Deze gegevens zijn gebaseerd op de huidige stand van onze kennis. Zij beschrijven echter geen garantie van produkteigenschappen en vestigen geen contractuele rechtsbetrekking.

#### Afkortingen en acroniemen:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Ontvlambare vloeistoffen – Categorie 2

Skin Irrit. 2: Huidcorrosie/-irritatie – Categorie 2

Eye Irrit. 2: Ernstig oogletsel/oogirritatie – Categorie 2

Muta. 1B: Mutageniteit in geslachtscellen – Categorie 1B

Carc. 1A: Kankerverwekkendheid – Categorie 1A

STOT RE 1: Specifieke doelorgaan toxiciteit bij herhaalde blootstelling – Categorie 1

Asp. Tox. 1: Aspiratiegevaar – Categorie 1

# Fiche de données de sécurité

## selon 1907/2006/CE, Article 31

Date d'impression : 03.10.2016

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### RUBRIQUE 1: Identification de la substance/du mélange et de la société/l'entreprise

- **1.1 Identificateur de produit**
- **Nom du produit:** benzene
- **Numéro CE:**  
200-753-7
- **Numéro index:**  
601-020-00-8
- **1.2 Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées**  
*Pas d'autres informations importantes disponibles.*
- **Emploi de la substance / de la préparation** Produits chimiques pour laboratoires
- **1.3 Renseignements concernant le fournisseur de la fiche de données de sécurité**
- **Producteur/fournisseur:**  
Electron Microscopy Sciences  
1560 Industry Road  
USA-Hatfield, PA 19440  
Tel: 215-412-8400 Fax: 215-412-8450  
email: [info@emsdiasum.com](mailto:info@emsdiasum.com)  
[www.emsdiasum.com](http://www.emsdiasum.com)
- **Service chargé des renseignements:** Product safety department
- **1.4 Numéro d'appel d'urgence:**  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

### RUBRIQUE 2: Identification des dangers

- **2.1 Classification de la substance ou du mélange**
- **Classification selon le règlement (CE) n° 1272/2008**



GHS02 flamme

Flam. Liq. 2 H225 Liquide et vapeurs très inflammables.



GHS08 danger pour la santé

Muta. 1B H340 Peut induire des anomalies génétiques.

Carc. 1A H350 Peut provoquer le cancer.

STOT RE 1 H372 Risque avéré d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.

Asp. Tox. 1 H304 Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.



GHS07

Skin Irrit. 2 H315 Provoque une irritation cutanée.

Eye Irrit. 2 H319 Provoque une sévère irritation des yeux.

- **2.2 Éléments d'étiquetage**
- **Étiquetage selon le règlement (CE) n° 1272/2008** La substance est classifiée et étiquetée selon le règlement CLP.

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Nom du produit: benzene

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· **Pictogrammes de danger**

GHS02   GHS07   GHS08

· **Mention d'avertissement** Danger· **Mentions de danger**

H225 Liquide et vapeurs très inflammables.

H315 Provoque une irritation cutanée.

H319 Provoque une sévère irritation des yeux.

H340 Peut induire des anomalies génétiques.

H350 Peut provoquer le cancer.

H372 Risque avéré d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.

H304 Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.

· **Conseils de prudence**

P301+P310 EN CAS D'INGESTION: Appeler immédiatement un CENTRE ANTIPOISON/un médecin.

P303+P361+P353 EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux): Enlever immédiatement tous les vêtements contaminés. Rincer la peau à l'eau/Se doucher.

P305+P351+P338 EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.

P321 Traitement spécifique (voir sur cette étiquette).

P405 Garder sous clef.

P501 Éliminer le contenu/récipient conformément à la réglementation locale/régionale/nationale/internationale.

· **2.3 Autres dangers**· **Résultats des évaluations PBT et vPvB**· **PBT:** Non applicable.· **vPvB:** Non applicable.

### RUBRIQUE 3: Composition/informations sur les composants

· **3.1 Caractérisation chimique: Substances**· **No CAS Désignation**

benzene

· **Code(s) d'identification**· **Numéro CE:** 200-753-7· **Numéro index:** 601-020-00-8

### RUBRIQUE 4: Premiers secours

· **4.1 Description des premiers secours**· **Remarques générales:**

Les symptômes d'intoxication peuvent apparaître après de nombreuses heures seulement; une surveillance médicale est donc nécessaire au moins 48 heures après un accident.

· **Après inhalation:** En cas d'inconscience, coucher et transporter la personne en position latérale stable.· **Après contact avec la peau:** Laver immédiatement à l'eau et au savon et bien rincer.

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# Fiche de données de sécurité

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**Nom du produit: benzene**

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- **Après contact avec les yeux:**  
Rincer les yeux, pendant plusieurs minutes, sous l'eau courante en écartant bien les paupières. Si les troubles persistent, consulter un médecin.
- **Après ingestion:** Si les troubles persistent, consulter un médecin.
- **4.2 Principaux symptômes et effets, aigus et différés** Pas d'autres informations importantes disponibles.
- **4.3 Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires**  
Pas d'autres informations importantes disponibles.

### RUBRIQUE 5: Mesures de lutte contre l'incendie

- **5.1 Moyens d'extinction**
- **Moyens d'extinction:**  
CO<sub>2</sub>, poudre d'extinction ou eau pulvérisée. Combattre les foyers importants avec de l'eau pulvérisée ou de la mousse résistant à l'alcool.
- **Produits extincteurs déconseillés pour des raisons de sécurité:** Jet d'eau à grand débit
- **5.2 Dangers particuliers résultant de la substance ou du mélange**  
Pas d'autres informations importantes disponibles.
- **5.3 Conseils aux pompiers**
- **Équipement spécial de sécurité:** Aucune mesure particulière n'est requise.

### RUBRIQUE 6: Mesures à prendre en cas de dispersion accidentelle

- **6.1 Précautions individuelles, équipement de protection et procédures d'urgence**  
Porter un équipement de sécurité. Eloigner les personnes non protégées.
- **6.2 Précautions pour la protection de l'environnement:**  
Ne pas rejeter dans les canalisations, dans les eaux de surface et dans les nappes d'eau souterraines.
- **6.3 Méthodes et matériel de confinement et de nettoyage:**  
Recueillir les liquides à l'aide d'un produit absorbant (sable, kieselguhr, neutralisant d'acide, liant universel, sciure).  
Évacuer les matériaux contaminés en tant que déchets conformément au point 13.  
Assurer une aération suffisante.
- **6.4 Référence à d'autres rubriques**  
Afin d'obtenir des informations pour une manipulation sûre, consulter le chapitre 7.  
Afin d'obtenir des informations sur les équipements de protection personnels, consulter le chapitre 8.  
Afin d'obtenir des informations sur l'élimination, consulter le chapitre 13.

### RUBRIQUE 7: Manipulation et stockage

- **7.1 Précautions à prendre pour une manipulation sans danger**  
Ouvrir et manipuler les récipients avec précaution.
- **Préventions des incendies et des explosions:**  
Tenir à l'abri des sources d'inflammation - ne pas fumer.  
Prendre des mesures contre les charges électrostatiques.  
Tenir des appareils de protection respiratoire prêts.
- **7.2 Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités**
- **Stockage:**
- **Exigences concernant les lieux et conteneurs de stockage:** Stocker dans un endroit frais.
- **Indications concernant le stockage commun:** Pas nécessaire.
- **Autres indications sur les conditions de stockage:**  
Tenir les emballages hermétiquement fermés.  
Stocker au frais et au sec dans des fûts bien fermés.

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· 7.3 Utilisation(s) finale(s) particulière(s) Pas d'autres informations importantes disponibles.

### RUBRIQUE 8: Contrôles de l'exposition/protection individuelle

· **Indications complémentaires pour l'agencement des installations techniques:**

Sans autre indication, voir point 7.

· **8.1 Paramètres de contrôle**· **Composants présentant des valeurs-seuil à surveiller par poste de travail:****benzene**

|     |   |
|-----|---|
| VME | Valeur à long terme: 3,25 mg/m <sup>3</sup> , 1 ppm<br>CIA, M1B; risque de pénétration percutanée |
|-----|---|

· **Remarques supplémentaires:**

Le présent document s'appuie sur les listes en vigueur au moment de son élaboration.

· **8.2 Contrôles de l'exposition**· **Équipement de protection individuel:**· **Mesures générales de protection et d'hygiène:**

Tenir à l'écart des produits alimentaires, des boissons et de la nourriture pour animaux.

Retirer immédiatement les vêtements souillés ou humectés.

Se laver les mains avant les pauses et en fin de travail.

Conserver à part les vêtements de protection.

Éviter tout contact avec les yeux et avec la peau.

· **Protection respiratoire:**

En cas d'exposition faible ou de courte durée, utiliser un filtre respiratoire; en cas d'exposition intense ou durable, utiliser un appareil de respiration indépendant de l'air ambiant.

· **Protection des mains:**

Gants de protection

Le matériau des gants doit être imperméable et résistant au produit / à la substance / à la préparation.

À cause du manque de tests, aucune recommandation pour un matériau de gants pour le produit / la préparation / le mélange de produits chimiques ne peut être donnée.

Choix du matériau des gants en fonction des temps de pénétration, du taux de perméabilité et de la dégradation.

· **Matériau des gants**

Le choix de gants appropriés ne dépend pas seulement du matériau, mais également d'autres critères de qualité qui peuvent varier d'un fabricant à l'autre.

· **Temps de pénétration du matériau des gants**

Le temps de pénétration exact est à déterminer par le fabricant des gants de protection et à respecter.

· **Protection des yeux:**

Lunettes de protection hermétiques

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### RUBRIQUE 9: Propriétés physiques et chimiques

#### · 9.1 Informations sur les propriétés physiques et chimiques essentielles

##### · Indications générales

##### · Aspect:

|                 |                |
|-----------------|----------------|
| Forme:          | Liquide        |
| Couleur:        | Incolore       |
| Odeur:          | Aromatique     |
| Seuil olfactif: | Non déterminé. |

· valeur du pH: Non déterminé.

##### · Changement d'état

|                     |       |
|---------------------|-------|
| Point de fusion:    | 6 °C  |
| Point d'ébullition: | 80 °C |

· Point d'éclair -11 °C

· Inflammabilité (solide, gazeux): Non applicable.

· Température d'inflammation: 555 °C

· Température de décomposition: Non déterminé.

· Auto-inflammation: Non déterminé.

· Danger d'explosion: Le produit n'est pas explosif; toutefois, des mélanges explosifs vapeur-air peuvent se former.

##### · Limites d'explosion:

|             |           |
|-------------|-----------|
| Inférieure: | 1,2 Vol % |
| Supérieure: | 8 Vol %   |

· Pression de vapeur à 20 °C: 100 hPa

· Densité à 20 °C: 0,88 g/cm<sup>3</sup>

· Densité relative Non déterminé.

· Densité de vapeur Non déterminé.

· Vitesse d'évaporation Non déterminé.

##### · Solubilité dans/miscibilité avec

l'eau à 20 °C: 0,7 g/l

· Coefficient de partage (n-octanol/eau): Non déterminé.

##### · Viscosité:

|                    |                |
|--------------------|----------------|
| Dynamique à 20 °C: | 0,66 mPas      |
| Cinématique:       | Non déterminé. |

· 9.2 Autres informations Pas d'autres informations importantes disponibles.

### RUBRIQUE 10: Stabilité et réactivité

· 10.1 Réactivité Pas d'autres informations importantes disponibles.

· 10.2 Stabilité chimique

· Décomposition thermique/conditions à éviter: Pas de décomposition en cas d'usage conforme.

· 10.3 Possibilité de réactions dangereuses Aucune réaction dangereuse connue.

· 10.4 Conditions à éviter Pas d'autres informations importantes disponibles.

· 10.5 Matières incompatibles: Pas d'autres informations importantes disponibles.

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· **10.6 Produits de décomposition dangereux:** Pas de produits de décomposition dangereux connus

### RUBRIQUE 11: Informations toxicologiques

- **11.1 Informations sur les effets toxicologiques**
- **Toxicité aiguë** Compte tenu des données disponibles, les critères de classification ne sont pas remplis.

- **Valeurs LD/LC50 déterminantes pour la classification:**

|             |          |                    |
|-------------|----------|--------------------|
| Oral        | LD50     | 4894 mg/kg (rat)   |
| Dermique    | LD50     | 48 mg/kg (souris)  |
| Inhalatoire | LC50/4 h | 9980 mg/l (souris) |

- **Effet primaire d'irritation:**
- **Corrosion cutanée/irritation cutanée**  
Provoque une irritation cutanée.
- **Lésions oculaires graves/irritation oculaire**  
Provoque une sévère irritation des yeux.
- **Sensibilisation respiratoire ou cutanée**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Effets CMR (cancérogène, mutagène et toxique pour la reproduction)**
- **Mutagenicité sur les cellules germinales**  
Peut induire des anomalies génétiques.
- **Cancérogénicité**  
Peut provoquer le cancer.
- **Toxicité pour la reproduction**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Toxicité spécifique pour certains organes cibles - exposition unique**  
Compte tenu des données disponibles, les critères de classification ne sont pas remplis.
- **Toxicité spécifique pour certains organes cibles - exposition répétée**  
Risque avéré d'effets graves pour les organes à la suite d'expositions répétées ou d'une exposition prolongée.
- **Danger par aspiration**  
Peut être mortel en cas d'ingestion et de pénétration dans les voies respiratoires.

### RUBRIQUE 12: Informations écologiques

- **12.1 Toxicité**
- **Toxicité aquatique:** Pas d'autres informations importantes disponibles.
- **12.2 Persistance et dégradabilité** Pas d'autres informations importantes disponibles.
- **12.3 Potentiel de bioaccumulation** Pas d'autres informations importantes disponibles.
- **12.4 Mobilité dans le sol** Pas d'autres informations importantes disponibles.
- **Autres indications écologiques:**
- **Indications générales:**  
Catégorie de pollution des eaux 3 (D) (classification selon liste): très polluant  
Ne pas laisser pénétrer dans la nappe phréatique, les eaux ou les canalisations, même pas en petite quantité.  
Danger pour l'eau potable dès fuite d'une quantité minimale dans le sous-sol.
- **12.5 Résultats des évaluations PBT et VPVB**
- **PBT:** Non applicable.
- **vPvB:** Non applicable.
- **12.6 Autres effets néfastes** Pas d'autres informations importantes disponibles.

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### RUBRIQUE 13: Considérations relatives à l'élimination

- **13.1 Méthodes de traitement des déchets**
- **Recommandation:** Ne doit pas être évacué avec les ordures ménagères. Ne pas laisser pénétrer dans les égouts.
- **Emballages non nettoyés:**
- **Recommandation:** Evacuation conformément aux prescriptions légales.

### RUBRIQUE 14: Informations relatives au transport

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>· <b>14.1 Numéro ONU</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>   | UN1114  |
| <ul style="list-style-type: none"> <li>· <b>14.2 Désignation officielle de transport de l'ONU</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG, IATA</b></li> </ul>  | 1114 BENZÈNE<br>BENZENE   |
| <ul style="list-style-type: none"> <li>· <b>14.3 Classe(s) de danger pour le transport</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <div style="text-align: center;">  </div>          |
| <ul style="list-style-type: none"> <li>· <b>Classe</b></li> <li>· <b>Étiquette</b></li> </ul>  | 3 Liquides inflammables.<br>3   |
| <ul style="list-style-type: none"> <li>· <b>14.4 Groupe d'emballage</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>   | II  |
| <ul style="list-style-type: none"> <li>· <b>14.5 Dangers pour l'environnement:</b></li> </ul>  | Non applicable.   |
| <ul style="list-style-type: none"> <li>· <b>14.6 Précautions particulières à prendre par l'utilisateur</b></li> <li>· <b>Indice Kemler:</b></li> <li>· <b>No EMS:</b></li> <li>· <b>Stowage Category</b></li> <li>· <b>Stowage Code</b></li> </ul> | Attention: Liquides inflammables.<br>33<br>3-03<br>B<br>SW2 Clear of living quarters.   |
| <ul style="list-style-type: none"> <li>· <b>14.7 Transport en vrac conformément à l'annexe II de la convention Marpol et au recueil IBC</b></li> </ul>   | Non applicable.   |
| <ul style="list-style-type: none"> <li>· <b>Indications complémentaires de transport:</b></li> </ul>   |   |
| <ul style="list-style-type: none"> <li>· <b>ADR</b></li> <li>· <b>Quantités limitées (LQ)</b></li> <li>· <b>Quantités exceptées (EQ)</b></li> </ul>  | 1L<br>Code: E2<br>Quantité maximale nette par emballage intérieur: 30 ml<br>Quantité maximale nette par emballage extérieur: 500 ml |
| <ul style="list-style-type: none"> <li>· <b>Catégorie de transport</b></li> <li>· <b>Code de restriction en tunnels</b></li> </ul>   | 2<br>D/E  |
| <ul style="list-style-type: none"> <li>· <b>IMDG</b></li> <li>· <b>Limited quantities (LQ)</b></li> </ul>  | 1L  |

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|                                     |   |
|-------------------------------------|---|
| · <b>Excepted quantities (EQ)</b>   | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · <b>"Règlement type" de l'ONU:</b> | UN 1114 BENZÈNE, 3, II  |

### RUBRIQUE 15: Informations relatives à la réglementation

- **15.1 Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement**
- **Directive 2012/18/UE**
- **Substances dangereuses désignées - ANNEXE I** la substance n'est pas comprise
- **Catégorie SEVESO P5c LIQUIDES INFLAMMABLES**
- **Quantité seuil (tonnes) pour l'application des exigences relatives au seuil bas** 5.000 t
- **Quantité seuil (tonnes) pour l'application des exigences relatives au seuil haut** 50.000 t
- **RÈGLEMENT (CE) N° 1907/2006 ANNEXE XVII** Conditions de limitation: 3, 5, 28, 29, 40
- **Prescriptions nationales:**
- **Indications sur les restrictions de travail:**  
Le personnel ne doit pas être exposé à cette substance dangereuse. Les autorités peuvent autoriser des exceptions dans des cas particuliers.
- **15.2 Évaluation de la sécurité chimique:** Une évaluation de la sécurité chimique n'a pas été réalisée.

### RUBRIQUE 16: Autres informations

Ces indications sont fondées sur l'état actuel de nos connaissances, mais ne constituent pas une garantie quant aux propriétés du produit et ne donnent pas lieu à un rapport juridique contractuel.

- **Acronymes et abréviations:**  
ADR: Accord européen sur le transport des marchandises dangereuses par Route  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Flam. Liq. 2: Liquides inflammables – Catégorie 2  
Skin Irrit. 2: Corrosion cutanée/irritation cutanée – Catégorie 2  
Eye Irrit. 2: Lésions oculaires graves/irritation oculaire – Catégorie 2  
Muta. 1B: Mutagénicité sur les cellules germinales – Catégorie 1B  
Carc. 1A: Cancérogénicité – Catégorie 1A  
STOT RE 1: Toxicité spécifique pour certains organes cibles (exposition répétée) – Catégorie 1  
Asp. Tox. 1: Danger par aspiration – Catégorie 1

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### ABSCHNITT 1: Bezeichnung des Stoffs beziehungsweise des Gemischs und des Unternehmens

· **1.1 Produktidentifikator**

· **Handelsname:** benzene

· **EG-Nummer:**

200-753-7

· **Indexnummer:**

601-020-00-8

· **1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird**

Keine weiteren relevanten Informationen verfügbar.

· **Verwendung des Stoffes / des Gemisches** Laborchemikalien

· **1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt**

· **Hersteller/Lieferant:**

Electron Microscopy Sciences

1560 Industry Road

USA-Hatfield, PA 19440

Tel: 215-412-8400 Fax: 215-412-8450

email: [info@emsdiasum.com](mailto:info@emsdiasum.com)

[www.emsdiasum.com](http://www.emsdiasum.com)

Science Services GmbH

Unterhachinger Str. 75

81737 München Germany

Tel: +49(0)89 18 93 668-0

[safety@scienceservices.de](mailto:safety@scienceservices.de)

24h Giftnotruf Munchen: +49 (0)89 19240

Toxikologische Abteilung der II. Medizinischen Klinik

rechts der Isar, Munchen. - [www.toxinfo.org](http://www.toxinfo.org)

· **Auskunftgebender Bereich:** Product safety department

· **1.4 Notrufnummer:**

ChemTrec 1-800-424-9300 Contract CCN7661

1-703-527-3887

### ABSCHNITT 2: Mögliche Gefahren

· **2.1 Einstufung des Stoffs oder Gemischs**

· **Einstufung gemäß Verordnung (EG) Nr. 1272/2008**



GHS02 Flamme

Flam. Liq. 2 H225 Flüssigkeit und Dampf leicht entzündbar.



GHS08 Gesundheitsgefahr

Muta. 1B H340 Kann genetische Defekte verursachen.

Carc. 1A H350 Kann Krebs erzeugen.

STOT RE 1 H372 Schädigt die Organe bei längerer oder wiederholter Exposition.

Asp. Tox. 1 H304 Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.

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GHS07

*Skin Irrit. 2 H315 Verursacht Hautreizungen.*  
*Eye Irrit. 2 H319 Verursacht schwere Augenreizung.*

- **2.2 Kennzeichnungselemente**
- **Kennzeichnung gemäß Verordnung (EG) Nr. 1272/2008**  
*Der Stoff ist gemäß CLP-Verordnung eingestuft und gekennzeichnet.*
- **Gefahrenpiktogramme**



GHS02 GHS07 GHS08

- **Signalwort Gefahr**
- **Gefahrenhinweise**  
*H225 Flüssigkeit und Dampf leicht entzündbar.*  
*H315 Verursacht Hautreizungen.*  
*H319 Verursacht schwere Augenreizung.*  
*H340 Kann genetische Defekte verursachen.*  
*H350 Kann Krebs erzeugen.*  
*H372 Schädigt die Organe bei längerer oder wiederholter Exposition.*  
*H304 Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.*
- **Sicherheitshinweise**  
*P301+P310 BEI VERSCHLUCKEN: Sofort GIFTINFORMATIONSZENTRUM/Arzt anrufen.*  
*P303+P361+P353 BEI BERÜHRUNG MIT DER HAUT (oder dem Haar): Alle kontaminierten Kleidungsstücke sofort ausziehen. Haut mit Wasser abwaschen/duschen.*  
*P305+P351+P338 BEI KONTAKT MIT DEN AUGEN: Einige Minuten lang behutsam mit Wasser spülen. Eventuell vorhandene Kontaktlinsen nach Möglichkeit entfernen. Weiter spülen.*  
*P321 Besondere Behandlung (siehe auf diesem Kennzeichnungsetikett).*  
*P405 Unter Verschluss aufbewahren.*  
*P501 Entsorgung des Inhalts / des Behälters gemäß den örtlichen / regionalen / nationalen / internationalen Vorschriften.*
- **Zusätzliche Angaben:**  
*Nur für gewerbliche Anwender.*
- **2.3 Sonstige Gefahren**
- **Ergebnisse der PBT- und vPvB-Beurteilung**
- **PBT:** Nicht anwendbar.
- **vPvB:** Nicht anwendbar.

### ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen

- **3.1 Chemische Charakterisierung: Stoffe**
- **CAS-Nr. Bezeichnung**  
*benzene*
- **Identifikationsnummer(n)**
- **EG-Nummer:** 200-753-7
- **Indexnummer:** 601-020-00-8

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### ABSCHNITT 4: Erste-Hilfe-Maßnahmen

#### · 4.1 Beschreibung der Erste-Hilfe-Maßnahmen

##### · **Allgemeine Hinweise:**

Vergiftungssymptome können erst nach vielen Stunden auftreten, deshalb ärztliche Überwachung mindestens 48 Stunden nach einem Unfall.

· **Nach Einatmen:** Bei Bewußtlosigkeit Lagerung und Transport in stabiler Seitenlage.

· **Nach Hautkontakt:** Sofort mit Wasser und Seife abwaschen und gut nachspülen.

##### · **Nach Augenkontakt:**

Augen mehrere Minuten bei geöffnetem Lidspalt unter fließendem Wasser spülen. Bei anhaltenden Beschwerden Arzt konsultieren.

· **Nach Verschlucken:** Bei anhaltenden Beschwerden Arzt konsultieren.

#### · 4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen

Keine weiteren relevanten Informationen verfügbar.

#### · 4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung

Keine weiteren relevanten Informationen verfügbar.

### ABSCHNITT 5: Maßnahmen zur Brandbekämpfung

#### · 5.1 Löschmittel

##### · **Geeignete Löschmittel:**

CO<sub>2</sub>, Löschpulver oder Wassersprühstrahl. Größeren Brand mit Wassersprühstrahl oder alkoholbeständigem Schaum bekämpfen.

· **Aus Sicherheitsgründen ungeeignete Löschmittel:** Wasser im Vollstrahl

#### · 5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren

Keine weiteren relevanten Informationen verfügbar.

#### · 5.3 Hinweise für die Brandbekämpfung

· **Besondere Schutzausrüstung:** Keine besonderen Maßnahmen erforderlich.

### ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung

#### · 6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren

Schutzausrüstung tragen. Ungeschützte Personen fernhalten.

· 6.2 **Umweltschutzmaßnahmen:** Nicht in die Kanalisation/Oberflächenwasser/Grundwasser gelangen lassen.

#### · 6.3 Methoden und Material für Rückhaltung und Reinigung:

Mit flüssigkeitsbindendem Material (Sand, Kieselgur, Säurebinder, Universalbinder, Sägemehl) aufnehmen.

Kontaminiertes Material als Abfall nach Abschnitt 13 entsorgen.

Für ausreichende Lüftung sorgen.

#### · 6.4 Verweis auf andere Abschnitte

Informationen zur sicheren Handhabung siehe Abschnitt 7.

Informationen zur persönlichen Schutzausrüstung siehe Abschnitt 8.

Informationen zur Entsorgung siehe Abschnitt 13.

### ABSCHNITT 7: Handhabung und Lagerung

· 7.1 **Schutzmaßnahmen zur sicheren Handhabung** Behälter mit Vorsicht öffnen und handhaben.

#### · **Hinweise zum Brand- und Explosionsschutz:**

Zündquellen fernhalten - nicht rauchen.

Maßnahmen gegen elektrostatische Aufladung treffen.

Atemschutzgeräte bereithalten.

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- **7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten**
- **Lagerung:**
- **Anforderung an Lagerräume und Behälter:** An einem kühlen Ort lagern.
- **Zusammenlagerungshinweise:** Nicht erforderlich.
- **Weitere Angaben zu den Lagerbedingungen:**  
Behälter dicht geschlossen halten.  
In gut verschlossenen Gebinden kühl und trocken lagern.
- **Lagerklasse:**
- **Klassifizierung nach Betriebsicherheitsverordnung (BetrSichV):** Entzündbare Flüssigkeiten
- **7.3 Spezifische Endanwendungen** Keine weiteren relevanten Informationen verfügbar.

### ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen

- **Zusätzliche Hinweise zur Gestaltung technischer Anlagen:** Keine weiteren Angaben, siehe Abschnitt 7.
- **8.1 Zu überwachende Parameter**

- **Bestandteile mit arbeitsplatzbezogenen, zu überwachenden Grenzwerten:**

**benzene**

|          |  |
|----------|--|
| MAK      | vgl.Abschn.XIII  |
| TRGS 910 | Toleranzkonzentration: 1,9 mg/m <sup>3</sup> , 0,6 ppm, Überschreitungsfaktor: 8<br>Akzeptanzkonzentration: 0,2 mg/m <sup>3</sup> , 0,06 ppm |

- **Zusätzliche Hinweise:** Als Grundlage dienen die bei der Erstellung gültigen Listen.
- **8.2 Begrenzung und Überwachung der Exposition**
- **Persönliche Schutzausrüstung:**
- **Allgemeine Schutz- und Hygienemaßnahmen:**  
Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.  
Beschmutzte, getränkte Kleidung sofort ausziehen.  
Vor den Pausen und bei Arbeitsende Hände waschen.  
Getrennte Aufbewahrung der Schutzkleidung.  
Berührung mit den Augen und der Haut vermeiden.
- **Atemschutz:**  
Bei kurzzeitiger oder geringer Belastung Atemfiltergerät; bei intensiver bzw. längerer Exposition unluftunabhängiges Atemschutzgerät verwenden.
- **Handschutz:**



Schutzhandschuhe

Das Handschuhmaterial muss undurchlässig und beständig gegen das Produkt / den Stoff / die Zubereitung sein. Aufgrund fehlender Tests kann keine Empfehlung zum Handschuhmaterial für das Produkt / die Zubereitung / das Chemikaliengemisch abgegeben werden.

Auswahl des Handschuhmaterials unter Beachtung der Durchbruchzeiten, Permeationsraten und der Degradation.

- **Handschuhmaterial**  
Die Auswahl eines geeigneten Handschuhs ist nicht nur vom Material, sondern auch von weiteren Qualitätsmerkmalen abhängig und von Hersteller zu Hersteller unterschiedlich.
- **Durchdringungszeit des Handschuhmaterials**  
Die genaue Durchbruchzeit ist beim Schutzhandschuhhersteller zu erfahren und einzuhalten.

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**· Augenschutz:**

Dichtschließende Schutzbrille

### ABSCHNITT 9: Physikalische und chemische Eigenschaften

**· 9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften****· Allgemeine Angaben****· Aussehen:****Form:** Flüssig**Farbe:** Farblos**· Geruch:** Aromatisch**· Geruchsschwelle:** Nicht bestimmt.**· pH-Wert:** Nicht bestimmt.**· Zustandsänderung****Schmelzpunkt/Schmelzbereich:** 6 °C**Siedepunkt/Siedebereich:** 80 °C**· Flammpunkt:** -11 °C**· Entzündlichkeit (fest, gasförmig):** Nicht anwendbar.**· Zündtemperatur:** 555 °C**· Zersetzungstemperatur:** Nicht bestimmt.**· Selbstentzündlichkeit:** Nicht bestimmt.**· Explosionsgefahr:** Das Produkt ist nicht explosionsgefährlich, jedoch ist die Bildung explosionsgefährlicher Dampf-/Luftgemische möglich.**· Explosionsgrenzen:****Untere:** 1,2 Vol %**Obere:** 8 Vol %**· Dampfdruck bei 20 °C:** 100 hPa**· Dichte bei 20 °C:** 0,88 g/cm<sup>3</sup>**· Relative Dichte:** Nicht bestimmt.**· Dampfichte:** Nicht bestimmt.**· Verdampfungsgeschwindigkeit:** Nicht bestimmt.**· Löslichkeit in / Mischbarkeit mit****Wasser bei 20 °C:** 0,7 g/l**· Verteilungskoeffizient (n-Octanol/Wasser):** Nicht bestimmt.**· Viskosität:****Dynamisch bei 20 °C:** 0,66 mPas**Kinematisch:** Nicht bestimmt.**· 9.2 Sonstige Angaben:** Keine weiteren relevanten Informationen verfügbar.

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### ABSCHNITT 10: Stabilität und Reaktivität

- **10.1 Reaktivität** Keine weiteren relevanten Informationen verfügbar.
- **10.2 Chemische Stabilität**
- **Thermische Zersetzung / zu vermeidende Bedingungen:**  
Keine Zersetzung bei bestimmungsgemäßer Verwendung.
- **10.3 Möglichkeit gefährlicher Reaktionen** Keine gefährlichen Reaktionen bekannt.
- **10.4 Zu vermeidende Bedingungen** Keine weiteren relevanten Informationen verfügbar.
- **10.5 Unverträgliche Materialien:** Keine weiteren relevanten Informationen verfügbar.
- **10.6 Gefährliche Zersetzungsprodukte:** Keine gefährlichen Zersetzungsprodukte bekannt.

### ABSCHNITT 11: Toxikologische Angaben

- **11.1 Angaben zu toxikologischen Wirkungen**
- **Akute Toxizität** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

- **Einstufungsrelevante LD/LC50-Werte:**

|           |          |                   |
|-----------|----------|-------------------|
| Oral      | LD50     | 4894 mg/kg (rat)  |
| Dermal    | LD50     | 48 mg/kg (mouse)  |
| Inhalativ | LC50/4 h | 9980 mg/l (mouse) |

- **Primäre Reizwirkung:**
- **Ätz-/Reizwirkung auf die Haut**  
Verursacht Hautreizungen.
- **Schwere Augenschädigung/-reizung**  
Verursacht schwere Augenreizung.
- **Sensibilisierung der Atemwege/Haut** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
- **CMR-Wirkungen (krebserzeugende, erbgutverändernde und fortpflanzungsgefährdende Wirkung)**
- **Keimzell-Mutagenität**  
Kann genetische Defekte verursachen.
- **Karzinogenität**  
Kann Krebs erzeugen.
- **Reproduktionstoxizität** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
- **Spezifische Zielorgan-Toxizität bei einmaliger Exposition**  
Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.
- **Spezifische Zielorgan-Toxizität bei wiederholter Exposition**  
Schädigt die Organe bei längerer oder wiederholter Exposition.
- **Aspirationsgefahr**  
Kann bei Verschlucken und Eindringen in die Atemwege tödlich sein.

### ABSCHNITT 12: Umweltbezogene Angaben

- **12.1 Toxizität**
- **Aquatische Toxizität:** Keine weiteren relevanten Informationen verfügbar.
- **12.2 Persistenz und Abbaubarkeit** Keine weiteren relevanten Informationen verfügbar.
- **12.3 Bioakkumulationspotenzial** Keine weiteren relevanten Informationen verfügbar.
- **12.4 Mobilität im Boden** Keine weiteren relevanten Informationen verfügbar.
- **Weitere ökologische Hinweise:**
- **Allgemeine Hinweise:**  
Wassergefährdungsklasse 3 (Listeneinstufung): stark wassergefährdend  
Nicht in das Grundwasser, in Gewässer oder in die Kanalisation gelangen lassen, auch nicht in kleinen Mengen.  
Trinkwassergefährdung bereits beim Auslaufen geringster Mengen in den Untergrund.

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- **12.5 Ergebnisse der PBT- und vPvB-Beurteilung**
- **PBT:** Nicht anwendbar.
- **vPvB:** Nicht anwendbar.
- **12.6 Andere schädliche Wirkungen** Keine weiteren relevanten Informationen verfügbar.

### ABSCHNITT 13: Hinweise zur Entsorgung

- **13.1 Verfahren der Abfallbehandlung**
- **Empfehlung:** Darf nicht zusammen mit Hausmüll entsorgt werden. Nicht in die Kanalisation gelangen lassen.
- **Ungereinigte Verpackungen:**
- **Empfehlung:** Entsorgung gemäß den behördlichen Vorschriften.

### ABSCHNITT 14: Angaben zum Transport

- |   |   |
|---|---|
| <b>14.1 UN-Nummer</b>   | UN1114  |
| <b>ADR, IMDG, IATA</b>  |   |
| <b>14.2 Ordnungsgemäße UN-Versandbezeichnung</b>  | 1114 BENZEN   |
| <b>ADR</b>  | BENZENE   |
| <b>IMDG, IATA</b>   |   |
| <b>14.3 Transportgefahrenklassen</b>  |   |
| <b>ADR, IMDG, IATA</b>  |   |
|            |   |
| <b>Klasse</b>   | 3 Entzündbare flüssige Stoffe   |
| <b>Gefahrzettel</b>   | 3   |
| <b>14.4 Verpackungsgruppe</b>   | II  |
| <b>ADR, IMDG, IATA</b>  |   |
| <b>14.5 Umweltgefahren:</b>   | Nicht anwendbar.  |
| <b>14.6 Besondere Vorsichtsmaßnahmen für den Verwender</b>                                    | Achtung: Entzündbare flüssige Stoffe  |
| <b>Kemler-Zahl:</b>   | 33  |
| <b>EMS-Nummer:</b>  | 3-03  |
| <b>Stowage Category</b>   | B   |
| <b>Stowage Code</b>   | SW2 Clear of living quarters.   |
| <b>14.7 Massengutbeförderung gemäß Anhang II des MARPOL-Übereinkommens und gemäß IBC-Code</b> | Nicht anwendbar.  |
| <b>Transport/weitere Angaben:</b>   |   |
| <b>ADR</b>  |   |
| <b>Begrenzte Menge (LQ)</b>   | 1L  |
| <b>Freigestellte Mengen (EQ)</b>  | Code: E2<br>Höchste Nettomenge je Innenverpackung: 30 ml<br>Höchste Nettomenge je Außenverpackung: 500 ml |
| <b>Beförderungskategorie</b>  | 2   |

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|                                   |   |
|-----------------------------------|---|
| · <b>Tunnelbeschränkungscode</b>  | D/E   |
| · <b>IMDG</b>                     |   |
| · <b>Limited quantities (LQ)</b>  | 1L  |
| · <b>Excepted quantities (EQ)</b> | Code: E2<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 500 ml |
| · <b>UN "Model Regulation":</b>   | UN 1114 BENZEN, 3, II   |

### ABSCHNITT 15: Rechtsvorschriften

- **15.1 Vorschriften zu Sicherheit, Gesundheits- und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch**
- **Richtlinie 2012/18/EU**
- **Namentlich aufgeführte gefährliche Stoffe - ANHANG I** Der Stoff ist nicht enthalten.
- **Seveso-Kategorie P5c ENTZÜNDBARE FLÜSSIGKEITEN**
- **Mengenschwelle (in Tonnen) für die Anwendung in Betrieben der unteren Klasse 5.000 t**
- **Mengenschwelle (in Tonnen) für die Anwendung in Betrieben der oberen Klasse 50.000 t**
- **VERORDNUNG (EG) Nr. 1907/2006 ANHANG XVII** Beschränkungsbedingungen: 3, 5, 28, 29, 40
- **Nationale Vorschriften:**
- **Hinweise zur Beschäftigungsbeschränkung:**  
Arbeitnehmer dürfen diesem Gefahrstoff nicht ausgesetzt sein. Im Einzelfall kann die Behörde Ausnahmen zulassen.
- **Technische Anleitung Luft:**

| Klasse | Anteil in % |
|--------|-------------|
| III    | 100,0       |
- **Wassergefährdungsklasse: WGK 3 (Listeneinstufung): stark wassergefährdend.**
- **15.2 Stoffsicherheitsbeurteilung: Eine Stoffsicherheitsbeurteilung wurde nicht durchgeführt.**

### ABSCHNITT 16: Sonstige Angaben

Die Angaben stützen sich auf den heutigen Stand unserer Kenntnisse, sie stellen jedoch keine Zusicherung von Produkteigenschaften dar und begründen kein vertragliches Rechtsverhältnis.

- **Abkürzungen und Akronyme:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - Flam. Liq. 2: Entzündbare Flüssigkeiten – Kategorie 2
  - Skin Irrit. 2: Hautreizende/-ätzende Wirkung – Kategorie 2
  - Eye Irrit. 2: Schwere Augenschädigung/Augenreizung – Kategorie 2
  - Muta. 1B: Keimzellmutagenität – Kategorie 1B
  - Carc. 1A: Karzinogenität – Kategorie 1A
  - STOT RE 1: Spezifische Zielorgan-Toxizität (wiederholte Exposition) – Kategorie 1
  - Asp. Tox. 1: Aspirationsgefahr – Kategorie 1

**Scheda di dati di sicurezza**  
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### SEZIONE 1: Identificazione della sostanza o della miscela e della società/impresa

· **1.1 Identificatore del prodotto**

· **Denominazione commerciale:** benzene

· **Numeri CE:**

200-753-7

· **Numero indice:**

601-020-00-8

· **1.2 Usi identificati pertinenti della sostanza o della miscela e usi sconsigliati**

Non sono disponibili altre informazioni.

· **Utilizzazione della Sostanza / del Preparato** Prodotti chimici per laboratorio

· **1.3 Informazioni sul fornitore della scheda di dati di sicurezza**

· **Produttore/fornitore:**

Electron Microscopy Sciences

1560 Industry Road

USA-Hatfield, PA 19440

Tel: 215-412-8400 Fax: 215-412-8450

email: [info@emsdiasum.com](mailto:info@emsdiasum.com)

[www.emsdiasum.com](http://www.emsdiasum.com)

Societa Italiana Chimici

Via Rio Nell Ellba 140

00138 Rome, Italy

Tel: 39 06 8800211

Fax: 39 30 06 8815313

Web: [www.sichim.com](http://www.sichim.com)

· **Informazioni fornite da:** Product safety department

· **1.4 Numero telefonico di emergenza:**

ChemTrec 1-800-424-9300 Contract CCN7661

1-703-527-3887

### SEZIONE 2: Identificazione dei pericoli

· **2.1 Classificazione della sostanza o della miscela**

· **Classificazione secondo il regolamento (CE) n. 1272/2008**



GHS02 fiamma

Flam. Liq. 2 H225 Liquido e vapori facilmente infiammabili.



GHS08 pericolo per la salute

Muta. 1B H340 Può provocare alterazioni genetiche.

Carc. 1A H350 Può provocare il cancro.

STOT RE 1 H372 Provoca danni agli organi in caso di esposizione prolungata o ripetuta.

Asp. Tox. 1 H304 Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.



GHS07

Skin Irrit. 2 H315 Provoca irritazione cutanea.

Eye Irrit. 2 H319 Provoca grave irritazione oculare.

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**2.2 Elementi dell'etichetta****Etichettatura secondo il regolamento (CE) n. 1272/2008**

La sostanza è classificata ed etichettata conformemente al regolamento CLP.

**Pittogrammi di pericolo**

GHS02    GHS07    GHS08

**Avvertenza Pericolo****Indicazioni di pericolo**

H225 Liquido e vapori facilmente infiammabili.

H315 Provoca irritazione cutanea.

H319 Provoca grave irritazione oculare.

H340 Può provocare alterazioni genetiche.

H350 Può provocare il cancro.

H372 Provoca danni agli organi in caso di esposizione prolungata o ripetuta.

H304 Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.

**Consigli di prudenza**P301+P310 **IN CASO DI INGESTIONE:** contattare immediatamente un CENTRO ANTIVELENI/un medico.P303+P361+P353 **IN CASO DI CONTATTO CON LA PELLE** (o con i capelli): togliere immediatamente tutti gli indumenti contaminati. Sciacquare la pelle/fare una doccia.P305+P351+P338 **IN CASO DI CONTATTO CON GLI OCCHI:** sciacquare accuratamente per parecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare.

P321 Trattamento specifico (vedere su questa etichetta).

P405 Conservare sotto chiave.

P501 Smaltire il prodotto/recipiente in conformità con le disposizioni locali / regionali / nazionali / internazionali.

**2.3 Altri pericoli****Risultati della valutazione PBT e vPvB**

PBT: Non applicabile.

vPvB: Non applicabile.

**SEZIONE 3: Composizione/informazioni sugli ingredienti****3.1 Caratteristiche chimiche: Sostanze****Numero CAS**

benzene

**Numerali di identificazione**

Numeri CE: 200-753-7

Numero indice: 601-020-00-8

**SEZIONE 4: Misure di primo soccorso****4.1 Descrizione delle misure di primo soccorso****Indicazioni generali:**

I sintomi di avvelenamento possono comparire dopo molte ore, per tale motivo è necessaria la sorveglianza di un medico nelle 48 ore successive all'incidente.

**Inalazione:** Se il soggetto è svenuto provvedere a tenerlo durante il trasporto in posizione stabile su un fianco.**Contatto con la pelle:** Lavare immediatamente con acqua e sapone sciacquando accuratamente.

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- **Contatto con gli occhi:**  
Lavare con acqua corrente per diversi minuti tenendo le palpebre ben aperte. Se persiste il dolore consultare il medico.
- **Ingestione:** Se il dolore persiste consultare il medico.
- **4.2 Principali sintomi ed effetti, sia acuti che ritardati** Non sono disponibili altre informazioni.
- **4.3 Indicazione dell'eventuale necessità di consultare immediatamente un medico e di trattamenti speciali**  
Non sono disponibili altre informazioni.

### SEZIONE 5: Misure antincendio

- **5.1 Mezzi di estinzione**
- **Mezzi di estinzione idonei:**  
CO<sub>2</sub>, polvere o acqua nebulizzata. Estinguere gli incendi di grosse dimensioni con acqua nebulizzata o con schiuma resistente all'alcool.
- **Mezzi di estinzione inadatti per motivi di sicurezza:** Getti d'acqua
- **5.2 Pericoli speciali derivanti dalla sostanza o dalla miscela** Non sono disponibili altre informazioni.
- **5.3 Raccomandazioni per gli addetti all'estinzione degli incendi**
- **Mezzi protettivi specifici:** Non sono richiesti provvedimenti particolari.

### SEZIONE 6: Misure in caso di rilascio accidentale

- **6.1 Precauzioni personali, dispositivi di protezione e procedure in caso di emergenza**  
Indossare equipaggiamento protettivo. Allontanare le persone non equipaggiate.
- **6.2 Precauzioni ambientali:** Impedire infiltrazioni nella fognatura/nelle acque superficiali/nelle acque freatiche.
- **6.3 Metodi e materiali per il contenimento e per la bonifica:**  
Raccogliere il liquido con materiale assorbente (sabbia, tripoli, legante di acidi, legante universale, segatura).  
Smaltimento del materiale contaminato conformemente al punto 13.  
Provvedere ad una sufficiente areazione.
- **6.4 Riferimento ad altre sezioni**  
Per informazioni relative ad una manipolazione sicura, vedere capitolo 7.  
Per informazioni relative all'equipaggiamento protettivo ad uso personale vedere Capitolo 8.  
Per informazioni relative allo smaltimento vedere Capitolo 13.

### SEZIONE 7: Manipolazione e immagazzinamento

- **7.1 Precauzioni per la manipolazione sicura** Aprire e manipolare i recipienti con cautela.
- **Indicazioni in caso di incendio ed esplosione:**  
Tenere lontano da fonti di calore, non fumare.  
Adottare provvedimenti contro cariche elettrostatiche.  
Tener pronto il respiratore.
- **7.2 Condizioni per lo stoccaggio sicuro, comprese eventuali incompatibilità**
- **Stoccaggio:**
- **Requisiti dei magazzini e dei recipienti:** Conservare in ambiente fresco.
- **Indicazioni sullo stoccaggio misto:** Non necessario.
- **Ulteriori indicazioni relative alle condizioni di immagazzinamento:**  
Mantenere i recipienti ermeticamente chiusi.  
Conservare in luogo fresco e asciutto in fusti ben chiusi.
- **7.3 Usi finali particolari** Non sono disponibili altre informazioni.

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### SEZIONE 8: Controllo dell'esposizione/protezione individuale

· **Ulteriori indicazioni sulla struttura di impianti tecnici:** Nessun dato ulteriore, vedere punto 7.

· **8.1 Parametri di controllo**

· **Componenti i cui valori limite devono essere tenuti sotto controllo negli ambienti di lavoro:**

**benzene**

|     |   |
|-----|---|
| TWA | Valore a breve termine: 8 mg/m <sup>3</sup> , 2,5 ppm<br>Valore a lungo termine: 1,6 mg/m <sup>3</sup> , 0,5 ppm<br>Cute, A1, IBE |
|-----|---|

· **Componenti con valori limite biologici:**

**benzene**

|     |  |
|-----|--|
| IBE | 25 µg/g creatinina<br>Campioni: urine<br>Momento del prelievo: a fine turno<br>Indicatore biologico: Acido S-Fenil mercapturico  |
|     | 500 µg/g creatinina<br>Campioni: urine<br>Momento del prelievo: a fine turno<br>Indicatore biologico: acido trans,trans-muconico |

· **Ulteriori indicazioni:** Le liste valide alla data di compilazione sono state usate come base.

· **8.2 Controlli dell'esposizione**

· **Mezzi protettivi individuali:**

· **Norme generali protettive e di igiene del lavoro:**

- Tenere lontano da cibo, bevande e foraggi.
- Togliere immediatamente gli abiti contaminati.
- Lavarsi le mani prima dell'intervallo o a lavoro terminato.
- Custodire separatamente l'equipaggiamento protettivo.
- Evitare il contatto con gli occhi e la pelle.

· **Maschera protettiva:**

Nelle esposizioni brevi e minime utilizzare la maschera; nelle esposizioni più intense e durature indossare l'autorespiratore.

· **Guanti protettivi:**



Guanti protettivi

Il materiale dei guanti deve essere impermeabile e stabile contro il prodotto/ la sostanza/ la formulazione.

A causa della mancanza di tests non può essere consigliato alcun tipo di materiale per i guanti con cui manipolare il prodotto / la formulazione / la miscela di sostanze chimiche.

Scelta del materiale dei guanti in considerazione dei tempi di passaggio, dei tassi di permeazione e della degradazione.

· **Materiale dei guanti**

La scelta dei guanti adatti non dipende soltanto dal materiale bensì anche da altre caratteristiche di qualità variabili da un produttore a un altro.

· **Tempo di permeazione del materiale dei guanti**

Richiedere dal fornitore dei guanti il tempo di passaggio preciso il quale deve essere rispettato.

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· **Occhiali protettivi:**

Occhiali protettivi a tenuta

### SEZIONE 9: Proprietà fisiche e chimiche

#### · 9.1 Informazioni sulle proprietà fisiche e chimiche fondamentali

##### · Indicazioni generali

##### · Aspetto:

**Forma:** Liquido

**Colore:** Incolore

· **Odore:** Aromatico

· **Soglia olfattiva:** Non definito.

· **valori di pH:** Non definito.

##### · Cambiamento di stato

**Temperatura di fusione/ambito di fusione:** 6 °C

**Temperatura di ebollizione/ambito di ebollizione:** 80 °C

· **Punto di infiammabilità:** -11 °C

· **Infiammabilità (solido, gassoso):** Non applicabile.

· **Temperatura di accensione:** 555 °C

· **Temperatura di decomposizione:** Non definito.

· **Autoaccensione:** Non definito.

· **Pericolo di esplosione:** Prodotto non è esplosivo, è tuttavia possibile la formazione di miscele di vapori/aria esplosive.

##### · Limiti di infiammabilità:

**Inferiore:** 1,2 Vol %

**Superiore:** 8 Vol %

· **Tensione di vapore a 20 °C:** 100 hPa

· **Densità a 20 °C:** 0,88 g/cm<sup>3</sup>

· **Densità relativa** Non definito.

· **Densità del vapore** Non definito.

· **Velocità di evaporazione** Non definito.

· **Solubilità in/Miscibilità con acqua a 20 °C:**

0,7 g/l

· **Coefficiente di distribuzione (n-Octanol/acqua):** Non definito.

##### · Viscosità:

**Dinamica a 20 °C:** 0,66 mPas

**Cinematica:** Non definito.

· **9.2 Altre informazioni** Non sono disponibili altre informazioni.

(continua a pagina 6)

**Scheda di dati di sicurezza**  
ai sensi del regolamento 1907/2006/CE, Articolo 31

Stampato il: 03.10.2016

Revisione: 03.10.2016

Denominazione commerciale: benzene

(Segue da pagina 5)

**SEZIONE 10: Stabilità e reattività**

- **10.1 Reattività** Non sono disponibili altre informazioni.
- **10.2 Stabilità chimica**
- **Decomposizione termica/ condizioni da evitare:** Il prodotto non si decompone se utilizzato secondo le norme.
- **10.3 Possibilità di reazioni pericolose** Non sono note reazioni pericolose.
- **10.4 Condizioni da evitare** Non sono disponibili altre informazioni.
- **10.5 Materiali incompatibili:** Non sono disponibili altre informazioni.
- **10.6 Prodotti di decomposizione pericolosi:** Non sono noti prodotti di decomposizione pericolosi.

**SEZIONE 11: Informazioni tossicologiche**

- **11.1 Informazioni sugli effetti tossicologici**
- **Tossicità acuta** Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.

· **Valori LD/LC50 rilevanti per la classificazione:**

|                |          |                   |
|----------------|----------|-------------------|
| Orale          | LD50     | 4894 mg/kg (rat)  |
| Cutaneo        | LD50     | 48 mg/kg (mouse)  |
| Per inalazione | LC50/4 h | 9980 mg/l (mouse) |

- **Irritabilità primaria:**
- **Corrosione/irritazione cutanea**  
Provoca irritazione cutanea.
- **Lesioni oculari gravi/irritazioni oculari gravi**  
Provoca grave irritazione oculare.
- **Sensibilizzazione respiratoria o cutanea**  
Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Effetti CMR (cancerogenicità, mutagenicità e tossicità per la riproduzione)**
- **Mutagenicità delle cellule germinali**  
Può provocare alterazioni genetiche.
- **Cancerogenicità**  
Può provocare il cancro.
- **Tossicità per la riproduzione** Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Tossicità specifica per organi bersaglio (STOT) - esposizione singola**  
Basandosi sui dati disponibili i criteri di classificazione non sono soddisfatti.
- **Tossicità specifica per organi bersaglio (STOT) - esposizione ripetuta**  
Provoca danni agli organi in caso di esposizione prolungata o ripetuta.
- **Pericolo in caso di aspirazione**  
Può essere letale in caso di ingestione e di penetrazione nelle vie respiratorie.

**SEZIONE 12: Informazioni ecologiche**

- **12.1 Tossicità**
- **Tossicità acquatica:** Non sono disponibili altre informazioni.
- **12.2 Persistenza e degradabilità** Non sono disponibili altre informazioni.
- **12.3 Potenziale di bioaccumulo** Non sono disponibili altre informazioni.
- **12.4 Mobilità nel suolo** Non sono disponibili altre informazioni.
- **Ulteriori indicazioni in materia ambientale:**
- **Ulteriori indicazioni:**  
Pericolosità per le acque classe 3 (D) (Classif. secondo le liste): molto pericoloso  
Non immettere nelle acque freatiche, nei corsi d'acqua o nelle fognature, anche in piccole dosi.  
Pericolo per le acque potabili anche in caso di perdite nel sottosuolo di quantità minime di prodotto.

(continua a pagina 7)

**Scheda di dati di sicurezza**  
ai sensi del regolamento 1907/2006/CE, Articolo 31

Stampato il: 03.10.2016

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- 12.5 Risultati della valutazione PBT e vPvB
- PBT: Non applicabile.
- vPvB: Non applicabile.
- 12.6 Altri effetti avversi Non sono disponibili altre informazioni.

### SEZIONE 13: Considerazioni sullo smaltimento

- 13.1 Metodi di trattamento dei rifiuti
- Consigli: Non smaltire il prodotto insieme ai rifiuti domestici Non immettere nelle fognature.
- Imballaggi non puliti:
- Consigli: Smaltimento in conformità con le disposizioni amministrative.

### SEZIONE 14: Informazioni sul trasporto

- |  |   |
|--|---|
| · 14.1 Numero ONU  |   |
| · ADR, IMDG, IATA  | UN1114  |
| · 14.2 Nome di spedizione dell'ONU   |   |
| · ADR  | 1114 BENZENE  |
| · IMDG, IATA   | BENZENE   |
| · 14.3 Classi di pericolo connesso al trasporto                              |   |
| · ADR, IMDG, IATA  |   |
|  |  |
| · Classe   | 3 Liquidi infiammabili  |
| · Etichetta  | 3   |
| · 14.4 Gruppo di imballaggio   |   |
| · ADR, IMDG, IATA  | II  |
| · 14.5 Pericoli per l'ambiente:  | Non applicabile.  |
| · 14.6 Precauzioni speciali per gli utilizzatori                             | Attenzione: Liquidi infiammabili  |
| · Numero Kemler:   | 33  |
| · Numero EMS:  | 3-03  |
| · Stowage Category   | B   |
| · Stowage Code   | SW2 Clear of living quarters.   |
| · 14.7 Trasporto di rinfuse secondo l'allegato II di MARPOL ed il codice IBC | Non applicabile.  |
| · Trasporto/ulteriori indicazioni:   |   |
| · ADR  |   |
| · Quantità limitate (LQ)   | 1L  |
| · Quantità esenti (EQ)   | Codice: E2  |
|  | Quantità massima netta per imballaggio interno: 30 ml                               |
|  | Quantità massima netta per imballaggio esterno: 500 ml                              |
| · Categoria di trasporto   | 2   |
| · Codice di restrizione in galleria  | D/E   |

(continua a pagina 8)

**Scheda di dati di sicurezza**  
ai sensi del regolamento 1907/2006/CE, Articolo 31

Stampato il: 03.10.2016

Revisione: 03.10.2016

Denominazione commerciale: benzene

(Segue da pagina 7)

- |                                   |  |
|-----------------------------------|--|
| · <b>IMDG</b>                     |  |
| · <b>Limited quantities (LQ)</b>  | 1L   |
| · <b>Excepted quantities (EQ)</b> | Code: E2   |
|                                   | Maximum net quantity per inner packaging: 30 ml  |
|                                   | Maximum net quantity per outer packaging: 500 ml |
| · <b>UN "Model Regulation":</b>   | UN 1114 BENZENE, 3, II                           |

### SEZIONE 15: Informazioni sulla regolamentazione

- **15.1 Disposizioni legislative e regolamentari su salute, sicurezza e ambiente specifiche per la sostanza o la miscela**
- **Direttiva 2012/18/UE**
- **Sostanze pericolose specificate - ALLEGATO I** La sostanza non è contenuta
- **Categoria Seveso P5c** LIQUIDI INFIAMMABILI
- **Quantità limite (tonnellate) ai fini dell'applicazione dei requisiti di soglia inferiore** 5.000 t
- **Quantità limite (tonnellate) ai fini dell'applicazione dei requisiti di soglia superiore** 50.000 t
- **REGOLAMENTO (CE) n. 1907/2006 ALLEGATO XVII** Restrizioni: 3, 5, 28, 29, 40
- **Disposizioni nazionali:**
- **Indicazioni relative alla limitazione delle attività lavorative:**  
Il personale non deve essere esposto a questa sostanza pericolosa L'autorità può ammettere nei singoli casi delle eccezioni.
- **Istruzione tecnica aria:**

| Classe | quota in % |
|--------|------------|
| NC     | 100,0      |
- **15.2 Valutazione della sicurezza chimica:** Una valutazione della sicurezza chimica non è stata effettuata.

### SEZIONE 16: Altre informazioni

I dati sono riportati sulla base delle nostre conoscenze attuali, non rappresentano tuttavia alcuna garanzia delle caratteristiche del prodotto e non motivano alcun rapporto giuridico contrattuale.

- **Abbreviazioni e acronimi:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - Flam. Liq. 2: Liquidi infiammabili – Categoria 2
  - Skin Irrit. 2: Corrosione/irritazione della pelle – Categoria 2
  - Eye Irrit. 2: Gravi lesioni oculari/irritazione oculare – Categoria 2
  - Muta. 1B: Mutagenicità sulle cellule germinali – Categoria 1B
  - Carc. 1A: Cancerogenicità – Categoria 1A
  - STOT RE 1: Tossicità specifica per organi bersaglio (esposizione ripetuta) – Categoria 1
  - Asp. Tox. 1: Pericolo in caso di aspirazione – Categoria 1

# 물질안전보건자료 GHS에 따라라따

기압점: 2016.10.03

개정: 2016.10.03

## 1 화학제품과 회사에 관한 정보

### 제품제품제명

- 제품명: benzene
- EC 의번호:  
200-753-7

색인색인번호:  
601-020-00-8

해당 해당 물질이나 혼합물 관련 권고 및 사용금지용도 추가적인 정보가 존재하지 않습니다.

- 제품의 권고 용도와 사용 제한 사항
- 안전데이터표(Safety Data Sheet) 내 공급업체 관련 정보
- 제조자/수입자/유통업체 정보

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

Samchang Commercial Co., Ltd.  
Yeo Eui Do  
PO Box 1110  
Seoul, Korea  
Tel: 82 2 703 3040  
Fax: 82 2 717 3298

- 추가적인 정보: 제품 안전 정보
- 비상연락 전화번호:  
ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

## 2 유해성·위험성

- 순물질 또는 혼합물 분류



화염

인화성 액체 - 구분 2

H225 고인화성 액체 및 증기



건강에 위험

생식세포 변이원성 - 구분 1B

H340 유전적인 결함을 일으킬 수 있음

발암성 - 구분 1A

H350 암을 일으킬 수 있음

특정표적장기 독성 - 반복 노출 - 구분 1

H372 장기간 또는 반복노출 되면 신체 중에 손상을 일으킴

흡인 유해성 - 구분 1

H304 삼켜서 기도로 유입되면 치명적일 수 있음



피부 부식성/피부 자극성 - 구분 2

H315 피부에 자극을 일으킴

심한 눈 손상성/눈 자극성 - 구분 2

H319 눈에 심한 자극을 일으킴

(2 쪽에 계속)

# 물질안전보건자료

## GHS에 따라라따

기압점: 2016.10.03

개정: 2016.10.03

제품명: benzene

(1 쪽부터계속)

· 라벨표가 요소요소

· 라벨표가 요소요소

본 화학물질은 화학물질의 분류 및 표기에 관한 국제조화시스템(GHS)에 따라 분류 및 표기되었습니다.

· 그림문자



GHS02 GHS07 GHS08

· 신호어 위험

유해

- 고인화성 액체 및 증기
- 피부에 자극을 일으킴
- 눈에 심한 자극을 일으킴
- 유전적인 결함을 일으킬 수 있음
- 압을 일으킬 수 있음
- 장기간 또는 반복노출 되면 신체 중에 손상을 일으킴
- 삼켜서 기도로 유입되면 치명적일 수 있음

· 예방조치 문구문구

- 삼켰을 시: 즉시 독성물질센터/병원 연락 필요.
- 피부(또는 머리카락)에 묻으면 오염된 모든 의복은 벗으시오. 피부를 물로 씻으시오/샤워하시오.
- 눈에 묻으면 몇 분간 물로 조심해서 씻으시오. 가능하면콘택트렌즈를 제거하시오. 계속 씻으시오.
- (라벨 참조) 처치를 하시오.
- 잠금장치가 있는 저장장소에 저장하시오.
- 현지/지역/국가/국제 규정에 따라서 내용물/용기 노출

기타기타 유해성

- PBT(잔류성, 생물농축성, 생물농축성) 및 vPvB(고 잔류성, 고 생물농축성) 물질이 아니므로 해당사항 없음.
- PBT(잔류성, 생물농축성, 생물농축성) 물질이 아니므로 해당사항 없음.
- vPvB(고 잔류성, 고 생물농축성) 물질이 아니므로 해당사항 없음.

### 3 구성성분의 명칭 및 함유량

· 화학적 특성: 화학물질

· CAS-번호표시

benzene

식별식별 번호

· EC 의번호: 200-753-7

색인색인 번호: 601-020-00-8

### 4 응급조치 요령

· 응급조치외용 내용내용

· 일 반조치정보정보

중 독 증 상 은 몇 시 간 이 지 난 뒤 에 발 생 할 수 있 다. 따 라 서 사 고 가 발 생 한 후 에 적 어 도 48 시 간 동 안 은 의 료 진 의 관 찰 을 받 아 야 한 다.

· 흡입했을 때: 환자가 의식을 잃었을 경우에는 안전한 자세에서 환자를 운반한다.

· 피부에 접촉했을 때: 즉시물과비누로씻고잘행군다.

· 눈에눈에들여갔을 때: 흐르는 물에 눈을 몇분동안 씻어내고나서, 증상이 지속될 경우에는 의사와 상담한다

· 먹었을 때: 증상이 지속될 경우에는 의사와 상담한다.

기타기타 각자의 주의사항:

가장가장 중요한정보중생물농축성정보는영향영향적인 정보가 존재하지 않습니다.

(3 쪽에계속)

# 물질안전보건자료

## GHS에 따라라따

기압점: 2016.10.03

개정: 2016.10.03

**제품명:** benzene

· **즉각적인 의료처치 및 특별치료가 필요함을 시사하는 징후 중** **정확적인 정보가 존재하지 않습니다.** (2 쪽부터 계속)

### 5 폭발·화재시 대처방법

- **소화제**
- **적절한 소화제:**  
이산화탄소, 진화용 석회 가루 또는 물방사를 사용하고, 더 큰 화재는 물을 분사하거나 알코올이 함유된 거품으로 끈다.
- **부적절한 소화제:** 플레트용 물
- **본 화학물질이나 혼합물에서 발생하는 특별한 위험 특성** 추가적인 정보가 존재하지 않습니다.
- **소방관에게 대한 대안고사항**
- **화재 시 화재로부터 인명 보호를 위한 화재 예방 조치:** 특별한 조치가 필요없음.

### 6 누출 사고 시 대처방법

- **개인적 예방조치, 보호장비 및 응급 처치 절차** 안전장비 착용하고, 무방비의 사람은 격리시킨다.
- **환경/환경위생 관리 조치:** 하수도망/해수면위의물/지하수로도달하지않게한다.
- **밀폐된 용기에서 발생하는 화재 시 대처 방법:** 액체가 혼합된 물질 (모래, 규조토, 산성 결합 물, 일반 결합 물, 톱밥)에 흡입되도록 한다. 항목 13에 따라 오염된 물질을 쓰레기로 처분한다. 충분한 환기가 되도록 한다.
- **추가적인 예방 조치**  
안전 관리에 대한 정보는 제7 장 을 참고하시오.  
개인 보호 장비에 대한 정보는 제8 장 을 참고하시오.  
쓰레기 처리에 대한 정보는 제13 장 을 참고하시오.

### 7 취급 및 저장방법

- **취급 취급 취급**  
안전한 취급을 위한 **예방 조치** 조심스럽게용기를 개봉하거나취급한다.
- **화재/폭발 위험을 피하기 위한 예방 조치에 관한 정보**  
발화요소는 멀리둔다-금연.  
정전기의 충전으로부터 보호한다.  
호흡보호장비를항상비치한다.
- **혼합 위험성 중 안전 저장 조건**  
보관보관보관  
· **안전한 저장 방법** 방범가운 장소에 보관한다.  
· **하수/공공기관 시설에 대한 특별한 정보** 필요없음  
· **보관 조건에 관한 추가적인 정보**  
용기를 새지않게 밀폐한채 보관한다.  
밀폐된 용기속에서 늘 하고 건조 하게 보관 한다.  
· **구체적 최종 사용자** 추가적인 정보가 존재하지 않습니다.

### 8 노출방지 및 개인보호구

· **첨단시설 디자인에 대한 추가 정보:** 더 이상 의 자료는 없음. 항 목 7 을 참고하시오.

(4 쪽에 계속)



# 물질안전보건자료

## GHS에 따라 라다

기압점: 2016.10.03

개정: 2016.10.03

**제품명:** benzene

(3 쪽부터 계속)

**통제 문자표 번호**

**· 화학물질의 노출기준, 생물학적 노출기준 등:**

| benzene  |   |
|----------|---|
| TLV (KR) | 단기간의값: 16 mg/m <sup>3</sup> , 5 ppm<br>장기간의값: 3 mg/m <sup>3</sup> , 1 ppm<br>Skin   |
| PEL (US) | 단기간의값: 15* mg/m <sup>3</sup> , 5* ppm<br>장기간의값: 3* mg/m <sup>3</sup> , 1* ppm<br>*table Z-2 for exclusions in 29CFR1910.1028(d) |
| REL (US) | 단기간의값: 1 ppm<br>장기간의값: 0.1 ppm<br>See Pocket Guide App. A   |
| TLV (US) | 단기간의값: 8 mg/m <sup>3</sup> , 2.5 ppm<br>장기간의값: 1.6 mg/m <sup>3</sup> , 0.5 ppm<br>Skin; BEI                                     |

· 추가정보정보 조 할 당시에 유효 한 목록을 기초로 사용했다.

**노출 통제 통제 통제**

**개인 개인 보호구**

**· 일반적 보호 조치 및 위생 조치:**

- 식료품, 음료수와 사료로부터 멀리 떨어져 두어 놓는다.
- 더러워지거나 음료수가 묻은 옷은 즉시 탈의한다.
- 휴식 전 이나 작업이 끝날 때 마다 손을 씻는다.
- 방호복은 따로 보관한다.
- 눈과 피부와의 접촉은 피한다.

**· 호흡기 보호 보호**

· 단 시간 또는 경미한 오염의 경우에는 호흡 여과기를 사용한다. 심각한 또는 장기간 노출시에는 호흡 보호 장비를 사용한다.

**보수 보호 보호**



보호용 장갑

장갑재질은 제품 / 원료 / 조제를 통과시키지 않아야 하고, 내구성이 있어야 한다.  
테스트를 하지 않았기 때문에 제품 / 조제 / 화학 혼합물에 적합한 장갑재질에 대한 추천이 없다.  
투과 시간, 침투율과 저하를 고려해서 장갑 재료를 선택한다.

**· 장갑의 재료**

· 적합한 장갑의 선정은 재질 차이뿐만 아니라 품질 기준의 차이도 고려하여 이루어져야 하고 제조업자에 따라서도 다르게 선정되어야 한다.

· 장갑 재료의 투과 시간 정확한 관통 시간은 보호 장갑 제조자에 의하여 인지되고, 준수되어야 한다.

**보수 보호 보호**



확조이는 보안경

KR

(5 쪽에 계속)

# 물질안전보건자료

## GHS에 따라라따

기압점: 2016.10.03

개정: 2016.10.03

**제품명:** benzene

(4 쪽부터계속)

### 9 물리화학적 특성

기본 물리화학적 특성에 대한 정보

|                            |  |
|----------------------------|--|
| <b>· 일반정보</b>              |  |
| 외형외형의형                     | 액체의  |
| · 물량계상 상태                  | 색소가 없는                                       |
| · 색:                       | 향기있는   |
| 냄새냄새냄새                     | 알맞지않다.                                       |
| · 후각역치                     |  |
| · pH:                      | 알맞지않다.                                       |
| <b>· 상태변화</b>              |  |
| · 녹는점/어는점:                 | 6 °C   |
| · 초기초기끓는점과 끓는점범위범위         | 80 °C  |
| · 인화점:                     | -11 °C                                       |
| · 인화성액고체체기체                | 해당사항 없음.                                     |
| · 점화온도:                    | 555 °C                                       |
| <b>분해분해온도</b>              |  |
| · 자기점화:                    | 알맞지않다.                                       |
| · 폭발위험:                    | 이제품은폭발위험성이없지만, 폭발가능성이있는증기화합물/공기화합물의형성가능성이있다. |
| <b>인화 인화인화폭발 위험성 상한하한</b>  |  |
| · 아래로:                     | 1.2 Vol %                                    |
| · 위로위로위로                   | 8 Vol %                                      |
| · 증기압 의경우 20 °C:           | 100 hPa                                      |
| <b>밀도 밀도 밀도 의경우 20 °C:</b> |  |
| · 비중 비중 비중                 | 0.88 g/cm <sup>3</sup>                       |
| · 증기밀도:                    | 알맞지않다.                                       |
| · 증발 증발 증발 속도              | 알맞지않다.                                       |
| <b>· 용해도:</b>              |  |
| · 물 의경우 20 °C:             | 0.7 g/l                                      |
| · n 옥탄올/물 분배계수:            | 알맞지않다.                                       |
| <b>점도 점도 점도</b>            |  |
| · 역확성 의경우 20 °C:           | 0.66 mPas                                    |
| · 동점성:                     | 알맞지않다.                                       |
| 기타 정보 정보                   | 추가적인 정보가 존재하지 않습니다.                          |

### 10 안정성 및 반응성

- 반응성 추가적인 정보가 존재하지 않습니다.
  - 화학적 안정성
  - 화학적 안정성 및 유해 반응의 가능성 / 피해 야할 조건 조건에 따라 사용 할 경우 해체는 없다
  - 유해 반응 가능성 위험한 반응으로는 알려지지 않았다.
  - 피해 야할 조건 조건 추가적인 정보가 존재하지 않습니다.
- 혼합 혼합 혼합 물질 물질 추가적인 정보가 존재하지 않습니다.

(6 쪽에계속)

# 물질안전보건자료

## GHS에 따라 라다

기압점: 2016.10.03

개정: 2016.10.03

**제품명:** benzene

(5 쪽부터 계속)

· **유해분해물질:** 위험성있는 분해물들은 알려지지 않았다.

### 11 독성에 관한 정보

· **독성학적 영향에 대한 기본 정보**  
급성독성, 만성독성

· **LD/LC50-수치에 따른 분류**

|              |                   |
|--------------|-------------------|
| 구강의 LD50     | 4894 mg/kg (rat)  |
| 피부의 LD50     | 48 mg/kg (mouse)  |
| 흡입의 LC50/4 h | 9980 mg/l (mouse) |

· **일차적 자극 효과**

피부: 피부 부식성 또는 자극성: 피부와 점막을 자극한다.

심한 심한 눈부시거나 눈 자극성: 자극

· **감각화:** 민감한 영향이 없는 것으로 알려져 있다.

다음 다음 종류의 잠재적인 효과에 대한 기본 정보

· **CMR 효과 유발, 유발 변이성, 그라피톡시톡시독성**  
생식세포 변이원성 - 구분 1B, 발암성 - 구분 1A

### 12 환경에 미치는 영향

독성독성독성

- **수생독성:** 추가적인 정보가 존재하지 않습니다.
- **지속성 및 분해성:** 추가적인 정보가 존재하지 않습니다.
- **환경 시스템에서의 행동:**
- **생물농축 잠재성:** 추가적인 정보가 존재하지 않습니다.
- **토양내 이동성:** 추가적인 정보가 존재하지 않습니다.
- **추가적인 생태학 정보**

일반 열안정성 특징

수질오염등급 3 (목록분류): 심하게 수질오염이 된

지하수나, 하천으로 또는 하수도망에도 닿지 않게 한다. 역시 극소수의 양이라도 안 된다.

지하수로 아주 미세한 양이 유입되었을 경우 엔이미식수 오염 상태이다

· **PBT(잔류성, 생물농축성, 물질물질물질) vPvB(고 잔류성, 고 생물농축성 물질 물질 물질) 결과**

· **PBT(잔류성, 생물농축성, 물질물질물질) 당사항 없음.**

· **vPvB(고 잔류성, 고 생물농축성 물질 물질 물질) 당사항 없음.**

기타 기타 부속 추가적인 정보가 존재하지 않습니다.

### 13 폐기시 주의사항

· **폐기물 처리 방법**

권고 권고 관할 쓰레기와 함께 처리되어서는 안 된다. 하수도망으로 유입되어서는 안 된다.

· **비위생적 포장 포장**

권고 권고 관할 의지 침에 입각 한 쓰레기 처리.

### 14 운송에 필요한 정보

유엔 유엔 번호

· **ADR, IMDG, IATA**

UN1114

(7 쪽에 계속)

# 물질안전보건자료


## GHS에 따라라따

기압점: 2016.10.03

개정: 2016.10.03

**제품명:** benzene

(6 쪽부터계속)

|  |   |
|--|---|
| <ul style="list-style-type: none"> <li>· <b>적정적정적정명</b></li> <li>· <b>ADR</b></li> <li>· <b>IMDG, IATA</b></li> </ul>  | <p>1114 BENZENE<br/>BENZENE</p>   |
| <p><b>교통 교통 위험 클래스</b></p> <ul style="list-style-type: none"> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <p>3 발화성용액<br/>3</p>  |
|   |   |
| <p><b>등급등급등급</b></p> <ul style="list-style-type: none"> <li>· <b>위험물라벨라벨</b></li> </ul>  | <p>3 발화성용액<br/>3</p>  |
| <ul style="list-style-type: none"> <li>· <b>용기등급</b></li> <li>· <b>ADR, IMDG, IATA</b></li> </ul>  | <p>II</p>   |
| <ul style="list-style-type: none"> <li>· <b>환경적 유해물질:</b></li> </ul>   | <p>해당사항 없음.</p>   |
| <ul style="list-style-type: none"> <li>· <b>이용지특별특별조치</b></li> </ul> <p><b>위험 위험 코드</b></p> <ul style="list-style-type: none"> <li>· <b>번호번호번호</b></li> <li>· <b>Stowage Category</b></li> <li>· <b>Stowage Code</b></li> </ul>  | <p>경고: 발화성용액<br/>33<br/>3-03<br/>B<br/>SW2 Clear of living quarters.</p>  |
| <ul style="list-style-type: none"> <li>· <b>MARPOL73/78(선박으로부터의 해양오염방지협약) 부속서2 및 IBC Code(국제선적화물코드)에 따</b></li> <li>· <b>발크발크운송운송</b></li> </ul>   | <p>해당사항 없음.</p>   |
| <ul style="list-style-type: none"> <li>· <b>ADR</b></li> </ul> <p><b>한정 한량 한량 한량</b></p> <ul style="list-style-type: none"> <li>· <b>Excepted quantities (EQ)</b></li> </ul> <p><b>운송 운송 운송 구분</b></p> <p><b>터널 터널 터널 코드</b></p> | <p>1L<br/>Code: E2<br/>Maximum net quantity per inner packaging: 30 ml<br/>Maximum net quantity per outer packaging: 500 ml<br/>2<br/>D/E</p> |
| <ul style="list-style-type: none"> <li>· <b>IMDG</b></li> <li>· <b>Limited quantities (LQ)</b></li> <li>· <b>Excepted quantities (EQ)</b></li> </ul>   | <p>1L<br/>Code: E2<br/>Maximum net quantity per inner packaging: 30 ml<br/>Maximum net quantity per outer packaging: 500 ml</p>               |
| <ul style="list-style-type: none"> <li>· <b>UN 번호 UN 번호 UN 번호</b></li> </ul>   | <p>UN 1114 BENZENE, 3, II</p>   |

### 15 법적 규제현황

해당 해당 화학물질 또는 혼합물에 대한 유해성, 안전성, 환경영향, 취급, 운송, 폐기물 처리를 법률

|  |          |
|--|----------|
| <ul style="list-style-type: none"> <li>· <b>Korean Existing Chemical Inventory</b></li> </ul> <p>benzene</p> | KE-02150 |
|--|----------|

- **화학물질관리법**
- **사고대비물질** 성분이 포함되어 있다
- **금지물질** 성분이 포함되어 있지 않다

(8 쪽에 계속)

# 물질안전보건자료

## GHS에 따라라따

기압점: 2016.10.03

개정: 2016.10.03

**제품명: benzene**

(7 쪽부터계속)

- **제한물질** 성분이포함 되어있지않다
- **유독물질** 성분이포함 되어있다
- **허가물질** 성분이포함 되어있다
- **라벨라벨요소**

본 화학물질은 화학물질의 분류 및 표기에 관한 국제조화시스템(GHS)에 따라 분류 및 표기되었습니다.

- **그림문자**



GHS02 GHS07 GHS08

- **신호어 위험**

유해 **유해** 문구

- 고인화성 액체 및 증기
- 피부에 자극을 일으킴
- 눈에 심한 자극을 일으킴
- 유전적인 결함을 일으킬 수 있음
- 암을 일으킬 수 있음
- 장기간 또는 반복노출 되면 신체 중에 손상을 일으킴
- 삼켜서 기도로 유입되면 치명적일 수 있음

- **예방조치** 문구문구

- 삼켰을 시: 즉시 독성물질센터/병원 연락 필요.
- 피부(또는 머리카락)에 묻으면 오염된 모든 의복은 벗으시오. 피부를 물로 씻으시오/샤워하시오.
- 눈에 묻으면 몇 분간 물로 조심해서 씻으시오. 가능하면콘택트렌즈를 제거하시오. 계속 씻으시오.
- (라벨 참조) 처치를 하시오.
- 잠금장치가 있는 저장장소에 저장하시오.
- 현지/지역/국가/국제 규정에 따라서 내용물/용기 노출

- **국내규정:**

- **사용제한에 대한정보** 정보

노동자들은이러한위험물질을내버리지말아야한다. 개별적인경우에관청은예외를허가할수있다.

- **화학물질 안전성 평가** 화학물질 안전성 평가가 수행되지 않음

### 16 그 밖의 참고사항

이보고는우리지식에대한오늘날의상태에대하여평가하고있다, 하지만이보고서는생산특성에관한보증은 기술하지않았으며계약적인법률관계에기반을두고있지도않다

최초 **최초** **작성일자:** 2016.10.03

개정 **개정** **작성일자:** 1 / 2016.10.03

- **약어와 두문자어:**

- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- EINECS: European Inventory of Existing Commercial Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- PBT: Persistent, Bioaccumulative and Toxic
- vPvB: very Persistent and very Bioaccumulative

# Ficha de datos de seguridad

## según 1907/2006/CE, Artículo 31

fecha de impresión 03.10.2016

Revisión: 03.10.2016

### SECCIÓN 1: Identificación de la sustancia o la mezcla y de la sociedad o la empresa

#### · 1.1 Identificador del producto

· **Nombre comercial:** benzene

· **Número CE:**  
200-753-7

· **Número de clasificación:**  
601-020-00-8

· **1.2 Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados**  
No existen más datos relevantes disponibles.

· **Utilización del producto / de la elaboración** Sustancias químicas de laboratorio

#### · 1.3 Datos del proveedor de la ficha de datos de seguridad

· **Fabricante/distribuidor:**

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

Aname  
C/ Perez Galdos no. 2  
28693 Quijorna  
Madrid, Spain  
Tel: +34.91.816.89.50  
Fax: +34.91.816.85.94  
email: ventas@aname.es

· **Área de información:** Product safety department

#### · 1.4 Teléfono de emergencia:

ChemTrec 1-800-424-9300 Contract CCN7661  
1-703-527-3887

### SECCIÓN 2: Identificación de los peligros

#### · 2.1 Clasificación de la sustancia o de la mezcla

· **Clasificación con arreglo al Reglamento (CE) n° 1272/2008**



GHS02 llama

Flam. Liq. 2 H225 Líquido y vapores muy inflamables.



GHS08 peligro para la salud

Muta. 1B H340 Puede provocar defectos genéticos.

Carc. 1A H350 Puede provocar cáncer.

STOT RE 1 H372 Provoca daños en los órganos tras exposiciones prolongadas o repetidas.

Asp. Tox. 1 H304 Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.



GHS07

Skin Irrit. 2 H315 Provoca irritación cutánea.

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*Eye Irrit. 2 H319 Provoca irritación ocular grave.***· 2.2 Elementos de la etiqueta****· Etiquetado con arreglo al Reglamento (CE) n° 1272/2008***La sustancia se ha clasificado y etiquetado de conformidad con el reglamento CLP.***· Pictogramas de peligro**

GHS02 GHS07 GHS08

**· Palabra de advertencia Peligro****· Indicaciones de peligro***H225 Líquido y vapores muy inflamables.**H315 Provoca irritación cutánea.**H319 Provoca irritación ocular grave.**H340 Puede provocar defectos genéticos.**H350 Puede provocar cáncer.**H372 Provoca daños en los órganos tras exposiciones prolongadas o repetidas.**H304 Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.***· Consejos de prudencia***P301+P310 EN CASO DE INGESTIÓN: Llamar inmediatamente a un CENTRO DE TOXICOLOGÍA/médico.**P303+P361+P353 EN CASO DE CONTACTO CON LA PIEL (o el pelo): Quitar inmediatamente todas las prendas contaminadas. Aclararse la piel con agua/ducharse.**P305+P351+P338 EN CASO DE CONTACTO CON LOS OJOS: Aclarar cuidadosamente con agua durante varios minutos. Quitar las lentes de contacto, si lleva y resulta fácil. Seguir aclarando.**P321 Se necesita un tratamiento específico (ver en esta etiqueta).**P405 Guardar bajo llave.**P501 Eliminar el contenido o el recipiente conforme a la reglamentación local/regional/nacional/internacional.***· 2.3 Otros peligros****· Resultados de la valoración PBT y mPmB****· PBT:** No aplicable.**· mPmB:** No aplicable.

### SECCIÓN 3: Composición/información sobre los componentes

**· 3.1 Caracterización química: Sustancias****· Denominación N° CAS***benzene***· Número(s) de identificación****· Número CE:** 200-753-7**· Número de clasificación:** 601-020-00-8

### SECCIÓN 4: Primeros auxilios

**· 4.1 Descripción de los primeros auxilios****· Instrucciones generales:***Los síntomas de intoxicación pueden presentarse después de muchas horas, por lo que se requiere una supervisión médica durante un mínimo de 48 horas después del accidente.*

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- **En caso de inhalación del producto:**  
Las personas desmayadas deben tenderse y transportarse de lado con la suficiente estabilidad.
- **En caso de contacto con la piel:** Lavar inmediatamente con agua y jabón y enjuagar bien.
- **En caso de con los ojos:**  
Limpiar los ojos abiertos durante varios minutos con agua corriente. En caso de trastornos persistentes consultar un médico.
- **En caso de ingestión:** Consultar un médico si los trastornos persisten.
- **4.2 Principales síntomas y efectos, agudos y retardados** No existen más datos relevantes disponibles.
- **4.3 Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente**  
No existen más datos relevantes disponibles.

### SECCIÓN 5: Medidas de lucha contra incendios

- **5.1 Medios de extinción**
- **Sustancias extintoras apropiadas:**  
CO<sub>2</sub>, polvo extintor o chorro de agua rociada. Combatir incendios mayores con chorro de agua rociada o espuma resistente al alcohol.
- **Sustancias extintoras inapropiadas por razones de seguridad:** Agua a pleno chorro
- **5.2 Peligros específicos derivados de la sustancia o la mezcla** No existen más datos relevantes disponibles.
- **5.3 Recomendaciones para el personal de lucha contra incendios**
- **Equipo especial de protección:** No se requieren medidas especiales.

### SECCIÓN 6: Medidas en caso de vertido accidental

- **6.1 Precauciones personales, equipo de protección y procedimientos de emergencia**  
Llevar puesto equipo de protección. Mantener alejadas las personas sin protección.
- **6.2 Precauciones relativas al medio ambiente:**  
Evitar que penetre en la canalización /aguas de superficie /agua subterráneas.
- **6.3 Métodos y material de contención y de limpieza:**  
Quitar con material absorbente (arena, kieselgur, aglutinante de ácidos, aglutinante universal, aserrín).  
Desechar el material contaminado como vertido según ítem 13.  
Asegurar suficiente ventilación.
- **6.4 Referencia a otras secciones**  
Ver capítulo 7 para mayor información sobre una manipulación segura.  
Ver capítulo 8 para mayor información sobre el equipo personal de protección.  
Para mayor información sobre cómo desechar el producto, ver capítulo 13.

### SECCIÓN 7: Manipulación y almacenamiento

- **7.1 Precauciones para una manipulación segura** Abrir y manejar el recipiente con cuidado.
- **Prevención de incendios y explosiones:**  
Mantener alejadas las fuentes de encendido. No fumar.  
Tomar medidas contra las cargas electrostáticas.  
Tener preparados los aparatos respiratorios.
- **7.2 Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades**
- **Almacenamiento:**
- **Exigencias con respecto al almacén y los recipientes:** Almacenar en un lugar fresco.
- **Normas en caso de un almacenamiento conjunto:** No es necesario.
- **Indicaciones adicionales sobre las condiciones de almacenamiento:**  
Mantener el recipiente cerrado herméticamente.  
Almacenarlo en envases bien cerrados en un lugar fresco y seco.

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· 7.3 Usos específicos finales No existen más datos relevantes disponibles.

### SECCIÓN 8: Controles de exposición/protección individual

· **Instrucciones adicionales para el acondicionamiento de instalaciones técnicas:**

Sin datos adicionales, ver punto 7.

· **8.1 Parámetros de control**· **Componentes con valores límite admisibles que deben controlarse en el puesto de trabajo:****benzene**LEP Valor de larga duración: 3,25 mg/m<sup>3</sup>, 1 ppm  
vía dérmica, VLB, v, r, véase Capítulo 8· **Componentes con valores límite biológicos:****benzene**VLB 0,045 mg/g creatinina  
Muestra: orina  
Momento de Muestero: Final de la jornada laboral  
Indicador Biológico: Ácido S-Fenilmercaptúrico

2 mg/l

Muestra: orina  
Momento de Muestero: Final de la jornada laboral  
Indicador Biológico: Ácido t,t-Mucónico

5 µg/l

Muestra: sangre  
Momento de Muestero: Final de la jornada laboral  
Indicador Biológico: Benceno total· **Indicaciones adicionales:** Como base se han utilizado las listas vigentes en el momento de la elaboración.· **8.2 Controles de la exposición**· **Equipo de protección individual:**· **Medidas generales de protección e higiene:**

Mantener alejado de alimentos, bebidas y alimentos para animales.

Quitarse de inmediato la ropa ensuciada o impregnada.

Lavarse las manos antes de las pausas y al final del trabajo.

Guardar la ropa protectora por separado.

Evitar el contacto con los ojos y la piel.

· **Protección respiratoria:**

Si la exposición va a ser breve o de poca intensidad, colocarse una máscara respiratoria. Para una exposición más intensa o de mayor duración, usar un aparato de respiración autónomo.

· **Protección de manos:**

Guantes de protección

El material del guante deberá ser impermeable y resistente al producto / sustancia / preparado.

Ante la ausencia de tests específicos, no se puede recomendar ningún material específico para guantes de protección contra el producto / preparado / mezcla de sustancias químicas.

Selección del material de los guantes en función de los tiempos de rotura, grado de permeabilidad y degradación.

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· **Material de los guantes**

La elección del guante adecuado no depende únicamente del material, sino también de otras características de calidad, que pueden variar de un fabricante a otro.

· **Tiempo de penetración del material de los guantes**

El tiempo de resistencia a la penetración exacto deberá ser pedido al fabricante de los guantes. Este tiempo debe ser respetado.

· **Protección de ojos:**



Gafas de protección herméticas

### SECCIÓN 9: Propiedades físicas y químicas

· **9.1 Información sobre propiedades físicas y químicas básicas**

· **Datos generales**

· **Aspecto:**

Forma: Líquido

Color: Incoloro

· **Olor:** Aromático

· **Umbral olfativo:** No determinado.

· **valor pH:** No determinado.

· **Cambio de estado**

Punto de fusión /campo de fusión: 6 °C

Punto de ebullición /campo de ebullición: 80 °C

· **Punto de inflamación:** -11 °C

· **Inflamabilidad (sólido, gaseiforme):** No aplicable.

· **Temperatura de ignición:** 555 °C

· **Temperatura de descomposición:** No determinado.

· **Autoinflamabilidad:** No determinado.

· **Peligro de explosión:** El producto no es explosivo; sin embargo, pueden formarse mezclas explosivas de vapor / aire.

· **Límites de explosión:**

Inferior: 1,2 Vol %

Superior: 8 Vol %

· **Presión de vapor a 20 °C:** 100 hPa

· **Densidad a 20 °C:** 0,88 g/cm<sup>3</sup>

· **Densidad relativa** No determinado.

· **Densidad de vapor** No determinado.

· **Velocidad de evaporación** No determinado.

· **Solubilidad en / miscibilidad con agua a 20 °C:**

0,7 g/l

· **Coefficiente de reparto (n-octanol/agua):** No determinado.

· **Viscosidad:**

Dinámica a 20 °C: 0,66 mPas

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- |                          |  |
|--------------------------|--|
| <b>Cinemática:</b>       | No determinado.                              |
| <b>· 9.2 Otros datos</b> | No existen más datos relevantes disponibles. |

### SECCIÓN 10: Estabilidad y reactividad

- **10.1 Reactividad** No existen más datos relevantes disponibles.
- **10.2 Estabilidad química**
- **Descomposición térmica / condiciones que deben evitarse:** No se descompone al emplearse adecuadamente.
- **10.3 Posibilidad de reacciones peligrosas** No se conocen reacciones peligrosas.
- **10.4 Condiciones que deben evitarse** No existen más datos relevantes disponibles.
- **10.5 Materiales incompatibles:** No existen más datos relevantes disponibles.
- **10.6 Productos de descomposición peligrosos:** No se conocen productos de descomposición peligrosos.

### SECCIÓN 11: Información toxicológica

- **11.1 Información sobre los efectos toxicológicos**
- **Toxicidad aguda** A la vista de los datos disponibles, no se cumplen los criterios de clasificación.

· **Valores LD/LC50 (dosis letal /dosis letal = 50%) relevantes para la clasificación:**

|             |          |                   |
|-------------|----------|-------------------|
| Oral        | LD50     | 4894 mg/kg (rat)  |
| Dermal      | LD50     | 48 mg/kg (mouse)  |
| Inhalatorio | LC50/4 h | 9980 mg/l (mouse) |

- **Efecto estimulante primario:**
- **Corrosión o irritación cutáneas**  
Provoca irritación cutánea.
- **Lesiones o irritación ocular graves**  
Provoca irritación ocular grave.
- **Sensibilización respiratoria o cutánea**  
A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Efectos CMR (carcinogenicidad, mutagenicidad y toxicidad para la reproducción)**
- **Mutagenicidad en células germinales**  
Puede provocar defectos genéticos.
- **Carcinogenicidad**  
Puede provocar cáncer.
- **Toxicidad para la reproducción** A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Toxicidad específica en determinados órganos (STOT) – exposición única**  
A la vista de los datos disponibles, no se cumplen los criterios de clasificación.
- **Toxicidad específica en determinados órganos (STOT) – exposición repetida**  
Provoca daños en los órganos tras exposiciones prolongadas o repetidas.
- **Peligro de aspiración**  
Puede ser mortal en caso de ingestión y penetración en las vías respiratorias.

### SECCIÓN 12: Información ecológica

- **12.1 Toxicidad**
- **Toxicidad acuática:** No existen más datos relevantes disponibles.
- **12.2 Persistencia y degradabilidad** No existen más datos relevantes disponibles.
- **12.3 Potencial de bioacumulación** No existen más datos relevantes disponibles.
- **12.4 Movilidad en el suelo** No existen más datos relevantes disponibles.

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- **Indicaciones medioambientales adicionales:**
- **Indicaciones generales:**  
 Nivel de riesgo para el agua 3 (clasificación de listas): muy peligroso para el agua  
 No dejar que se infiltre en aguas subterráneas, aguas superficiales o en alcantarillados, ni siquiera en pequeñas cantidades.  
 Una cantidad ínfima vertida en el subsuelo ya representa un peligro para el agua potable.
- **12.5 Resultados de la valoración PBT y mPmB**
- **PBT:** No aplicable.
- **mPmB:** No aplicable.
- **12.6 Otros efectos adversos** No existen más datos relevantes disponibles.

### SECCIÓN 13: Consideraciones relativas a la eliminación

- **13.1 Métodos para el tratamiento de residuos**
- **Recomendación:** No debe desecharse con la basura doméstica. No debe llegar al alcantarillado.
- **Embalajes sin limpiar:**
- **Recomendación:** Eliminar conforme a las disposiciones oficiales.

### SECCIÓN 14: Información relativa al transporte

- |   |                                |
|---|--------------------------------|
| · <b>14.1 Número ONU</b>  | UN1114                         |
| · <b>ADR, IMDG, IATA</b>  |                                |
| · <b>14.2 Designación oficial de transporte de las Naciones Unidas</b>                        |                                |
| · <b>ADR</b>  | 1114 BENCENO                   |
| · <b>IMDG, IATA</b>   | BENZENE                        |
| · <b>14.3 Clase(s) de peligro para el transporte</b>  |                                |
| · <b>ADR, IMDG, IATA</b>  |                                |
|            |                                |
| · <b>Clase</b>  | 3 Líquidos inflamables         |
| · <b>Etiqueta</b>   | 3                              |
| · <b>14.4 Grupo de embalaje</b>   |                                |
| · <b>ADR, IMDG, IATA</b>  | II                             |
| · <b>14.5 Peligros para el medio ambiente:</b>  | No aplicable.                  |
| · <b>14.6 Precauciones particulares para los usuarios</b>                                     | Atención: Líquidos inflamables |
| · <b>Número Kemler:</b>   | 33                             |
| · <b>Número EMS:</b>  | 3-03                           |
| · <b>Stowage Category</b>   | B                              |
| · <b>Stowage Code</b>   | SW2 Clear of living quarters.  |
| · <b>14.7 Transporte a granel con arreglo al anexo II del Convenio MARPOL y el Código IBC</b> | No aplicable.                  |

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**· Transporte/datos adicionales:****· ADR**· **Cantidades limitadas (LQ)**

1L

· **Cantidades exceptuadas (EQ)**

Código: E2

Cantidad neta máxima por envase interior: 30 ml

Cantidad neta máxima por embalaje exterior: 500 ml

· **Categoría de transporte**

2

· **Código de restricción del túnel**

D/E

**· 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

· **"Reglamentación Modelo" de la UNECE:**

UN 1114 BENCENO, 3, II

### SECCIÓN 15: Información reglamentaria

· **15.1 Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla**

· **Directiva 2012/18/UE**

· **Sustancias peligrosas nominadas - ANEXO I** No contiene la sustancia.

· **Categoría Seveso P5c LÍQUIDOS INFLAMABLES**

· **Cantidad umbral (toneladas) a efectos de aplicación de los requisitos de nivel inferior** 5.000 t

· **Cantidad umbral (toneladas) a efectos de aplicación de los requisitos de nivel superior** 50.000 t

· **REGLAMENTO (CE) n° 1907/2006 ANEXO XVII Restricciones:** 3, 5, 28, 29, 40

· **Disposiciones nacionales:**

· **Indicaciones sobre las limitaciones de trabajo:**

Los empleados no deben exponerse a esta sustancia peligrosa. En casos aislados las autoridades pueden hacer excepciones.

· **15.2 Evaluación de la seguridad química:** Una evaluación de la seguridad química no se ha llevado a cabo.

### SECCIÓN 16: Otra información

Los datos se fundan en el estado actual de nuestros conocimientos, pero no constituyen garantía alguna de cualidades del producto y no generan ninguna relación jurídica contractual.

· **Abreviaturas y acrónimos:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 2: Líquidos inflamables – Categoría 2

Skin Irrit. 2: Corrosión o irritación cutáneas – Categoría 2

Eye Irrit. 2: Lesiones oculares graves o irritación ocular – Categoría 2

Muta. 1B: Mutagenicidad en células germinales – Categoría 1B

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*Carc. 1A: Carcinogenicidad – Categoría 1A*

*STOT RE 1: Toxicidad específica en determinados órganos (exposiciones repetidas) – Categoría 1*

*Asp. Tox. 1: Peligro por aspiración – Categoría 1*

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ES