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

- **1.1 Product identifier**
  - Trade name: Chlorobenzene / Acetic Acid 2:1
  - Article number: A8664

- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
  - Application of the substance / the mixture
    - Laboratory chemical
    - Biochemistry

- **1.3 Details of the supplier of the safety data sheet**
  - Manufacturer/Supplier: AppliChem GmbH
    - Ottoweg 4
    - D-64291 Darmstadt
  - Tel.: +49 (0)6151 93570
  - Fax.: +49 (0)6151 935711
  - msds@applichem.com

  - Further information obtainable from: Dept. Compliance

- **1.4 Emergency telephone number:** +49(0)6151 93570 (Inside normal business hours)

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
  - Classification according to Regulation (EC) No 1272/2008
    - Flam. Liq. 3 H226 Flammable liquid and vapour.
    - Acute Tox. 4 H332 Harmful if inhaled.
    - Skin Corr. 1B H314 Causes severe skin burns and eye damage.
    - Eye Dam. 1 H318 Causes serious eye damage.
    - Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

- **2.2 Label elements**
  - Labelling according to Regulation (EC) No 1272/2008
    - The product is classified and labelled according to the CLP regulation.
  - Hazard pictograms
    - GHS02
    - GHS05
    - GHS07
    - GHS09

- **Signal word** Danger

- **Hazard-determining components of labelling:**
  - chlorobenzene
  - Acetic acid

- **Hazard statements**
  - H226 Flammable liquid and vapour.
  - H332 Harmful if inhaled.
  - H314 Causes severe skin burns and eye damage.
  - H411 Toxic to aquatic life with long lasting effects.

- **Precautionary statements**
  - P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

(Contd. on page 2)
Trade name: Chlorobenzene / Acetic Acid 2:1

- P273 Avoid release to the environment.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- 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.
- P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.

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

### SECTION 3: Composition/information on ingredients

#### 3.2 Chemical characterisation: Mixtures
- Description: Mixture of substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>CAS/EINECS</th>
<th>Component</th>
<th>Hazards</th>
<th>Concentration range</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-90-7</td>
<td>Chlorobenzene</td>
<td>Flam. Liq. 3, H226; Aquatic Chronic 2, H411; Acute Tox. 4, H332; Skin Irrit. 2, H315</td>
<td>&gt;50-&lt;100%</td>
</tr>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>Flam. Liq. 3, H226; Skin Corr. 1A, H314</td>
<td>&gt;30-%40%</td>
</tr>
</tbody>
</table>

### 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.
  Involve doctor immediately.

- After inhalation:
  Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
  In case of unconsciousness place patient stably in side position for transportation.
  If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

- After skin contact:
  Call a doctor immediately.
  Dab with polyethylene glycol 400.
  Immediately wash with water and soap and rinse thoroughly.

- After eye contact:
  Rinse opened eye for several minutes under running water. Then consult a doctor.
  Call a doctor immediately.

- After swallowing:
  make victim drink water (maximum of 2 drinking glasses)
  Do not attempt to neutralize.
  Call a doctor immediately.

#### 4.2 Most important symptoms and effects, both acute and delayed
- No further relevant information available.

#### 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: CO2, 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
  - Formation of toxic gases is possible during heating or in case of fire.
  - In case of fire, the following can be released:
    - Hydrogen chloride (HCl)
    - Phosgene gas
    - Carbon oxides (CO, CO2).

- 5.3 Advice for firefighters
  - Protective equipment:
    - Mouth respiratory protective device.
    - Wear self-contained respiratory protective device.
  - Additional information
    - Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
  - Wear protective equipment. Keep unprotected persons away.
  - Avoid substance contact.

- 6.2 Environmental precautions:
  - Inform respective authorities in case of seepage into water course or sewage system.
  - 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).
  - Use neutralising agent.
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
  - Clean up affected area.

- 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
  - Ensure good ventilation/exhaustion at the workplace.

- 7.2 Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: Prevent any seepage into the ground.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions:
      - Keep container tightly sealed.
      - Open receptacle only under localised extractor facilities.
      - Store under lock and key and with access restricted to technical experts or their assistants only.
    - Recommended storage temperature: +15 - +25°C
    - Storage class: 3
SECTION 8: Exposure controls/personal protection

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

8.1 Control parameters

- Ingredients with limit values that require monitoring at the workplace:

<table>
<thead>
<tr>
<th>Substance</th>
<th>IOELV (EU)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short-term</td>
<td>Long-term</td>
<td></td>
</tr>
<tr>
<td>108-90-7 chlorobenzene</td>
<td>70 mg/m³, 15 ppm</td>
<td>23 mg/m³, 5 ppm</td>
<td></td>
</tr>
<tr>
<td>64-19-7 Acetic acid</td>
<td>50 mg/m³, 20 ppm</td>
<td>25 mg/m³, 10 ppm</td>
<td></td>
</tr>
</tbody>
</table>

- DNELs

<table>
<thead>
<tr>
<th>Substance</th>
<th>Acute - local effects, worker</th>
<th>25 mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Long-term - local effects, worker</td>
<td>25 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Acute - local effects, general population</td>
<td>25 mg/m³</td>
</tr>
<tr>
<td></td>
<td>Long-term - local effects, general population</td>
<td>25 mg/m³</td>
</tr>
</tbody>
</table>

- PNECs

<table>
<thead>
<tr>
<th>Substance</th>
<th>Aquatic compartment - freshwater</th>
<th>3.058 mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aquatic compartment - marine water</td>
<td>3.058 mg/L</td>
</tr>
<tr>
<td></td>
<td>Aquatic compartment - water, intermittent releases</td>
<td>30.58 mg/L</td>
</tr>
<tr>
<td></td>
<td>Aquatic compartment - sediment in freshwater</td>
<td>11.36 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Aquatic compartment - sediment in marine water</td>
<td>1.136 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Sewage treatment plant</td>
<td>85 mg/L</td>
</tr>
</tbody>
</table>

- 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.
  - 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.
  - Filter ABEK

- Protection of hands:

  - Protective gloves

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  - Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

- Material of gloves

(Contd. on page 5)
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**
  The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **For the permanent contact gloves made of the following materials are suitable:**
  Recommended thickness of the material: ≥ 0.7 mm
  Fluorocarbon rubber (Viton)
  Value for the permeation: Level ≥ 480 min

- **As protection from splashes gloves made of the following materials are suitable:**
  Recommended thickness of the material: ≥ 0.7 mm
  Fluorocarbon rubber (Viton)
  Value for the permeation: Level ≥ 480 min

- **Eye protection:**
  Tightly sealed goggles

- **Body protection:**
  Use protective suit.
  Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

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**SECTION 9: Physical and chemical properties**

- **9.1 Information on basic physical and chemical properties**

  - **General Information**
    - **Appearance:**
      - Form: Fluid
      - Colour: Colourless
    - **Odour:** Pungent
    - **Odour threshold:** Not determined.
    - **pH-value:** Not determined.
    - **Change in condition**
      - **Melting point/freezing point:** Undetermined.
      - **Initial boiling point and boiling range:** Undetermined.
    - **Flash point:** 24 °C
    - **Flammability (solid, gas):** Not applicable.
    - **Ignition temperature:** 463 °C
    - **Decomposition temperature:** Not determined.
    - **Auto-ignition temperature:** Product is not selfigniting.
    - **Explosive properties:** Not determined.
    - **Explosion limits:**
      - Lower: 1.3 Vol %
      - Upper: 16 Vol %
    - **Vapour pressure at 20 °C:** 16 hPa
    - **Density:** Not determined.
    - **Relative density**
    - **Vapour density**

(Contd. on page 6)
· Evaporation rate: Not determined.
· Solubility in / Miscibility with water: No data available.
· Partition coefficient: n-octanol/water: Not determined.
· Viscosity:
  Dynamic: Not determined.
  Kinematic: Not determined.
· Solvent content:
  Organic solvents: 33.0 %
· 9.2 Other information: No further relevant information available.

SECTION 10: Stability and reactivity

· 10.1 Reactivity: No dangerous reactions known.
· 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 dangerous reactions known.
· 10.6 Hazardous decomposition products: In the event of fire: See chapter 5

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects:
  · Acute toxicity
    Harmful if inhaled.
  · LD/LC50 values relevant for classification:

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>108-90-7 chlorobenzene</td>
<td>Oral</td>
<td>LD50</td>
<td>2,290 mg/kg (rat)</td>
</tr>
<tr>
<td>64-19-7 Acetic acid</td>
<td>Oral</td>
<td>LD50</td>
<td>3,310 mg/kg (rat)</td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>1,130 mg/kg (rabbit)</td>
</tr>
<tr>
<td></td>
<td>Inhalative</td>
<td>LC50/4 h</td>
<td>5,620 mg/l (mouse)</td>
</tr>
</tbody>
</table>

· Primary irritant effect:
  · Skin corrosion/irritation
    Causes severe skin burns and eye damage.
  · Serious eye damage/irritation
    Causes serious eye damage.
  · After inhalation: Caustic effect on skin and mucous membranes.
  · 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
      Based on available data, the classification criteria are not met.
    · Carcinogenicity
      Based on available data, the classification criteria are not met.
    · 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
      Based on available data, the classification criteria are not met.
    · Aspiration hazard
      Based on available data, the classification criteria are not met.
SECTION 12: Ecological information

- 12.1 Toxicity

Aquatic toxicity:

- Type of test Effective concentration Method Assessment
- 64-19-7 Acetic acid
  - EC50/72 h >300.8 mg/l (Algae)
  - EC50/24 h >300.8 mg/l (daphnia magna) (OECD 202)
  - LC50/96 h >300.8 mg/l (fish) (OECD 203)

- 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.

- Ecotoxicological effects:
  - Remark: Toxic for fish

- Additional ecological information:
  - General notes:
    Must not reach sewage water or drainage ditch undiluted or unneutralised.
    Also poisonous for fish and plankton in water bodies.
    Toxic for aquatic organisms
  - Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
  - Do not allow product to reach ground water, water course or sewage system.
  - Danger to drinking water if even small quantities leak into the ground.

- 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
  Chemicals must be disposed of in compliance with the respective national regulations.
  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.
  Packagings that may not be cleansed are to be disposed of in the same manner as the product.

SECTION 14: Transport information

- 14.1 UN-Number
  ADR, IMDG, IATA UN2924

- 14.2 UN proper shipping name
  ADR FLAMMABLE LIQUID, CORROSIVE, N.O.S., ENVIRONMENTALLY HAZARDOUS
  IMDG, IATA FLAMMABLE LIQUID, CORROSIVE, N.O.S.
14.3 Transport hazard class(es)

- ADR
  - Class
  - Label
  - IMDG
  - Class
  - Label
  - IATA
  - Class
  - Label

14.4 Packing group

- ADR, IMDG, IATA

14.5 Environmental hazards:

- Marine pollutant:
  - No
- Special marking (ADR):
  - Symbol (fish and tree)

14.6 Special precautions for user

- Warning: Flammable liquids.
- EMS Number:
  - F-E-S-C
- Stowage Category
  - A
- Stowage Code
  - SW2 Clear of living quarters.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

- Not applicable.

Transport/Additional information:

- ADR
  - Limited quantities (LQ)
  - Exempted quantities (EQ)
  - IMDG
  - Limited quantities (LQ)
  - Exempted quantities (EQ)
Trade name: Chlorobenzene / Acetic Acid 2:1

· UN "Model Regulation":

   UN 2924 FLAMMABLE LIQUID, CORROSIVE, N.O.S., 3 (8), III, ENVIRONMENTALLY HAZARDOUS

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 None of the ingredients is listed.
   · Seveso category
     E2 Hazardous to the Aquatic Environment
   · Qualifying quantity (tonnes) for the application of lower-tier requirements 200 t
   · Qualifying quantity (tonnes) for the application of upper-tier requirements 500 t
   · REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

· 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.

· Relevant phrases
  H226 Flammable liquid and vapour.
  H314 Causes severe skin burns and eye damage.
  H315 Causes skin irritation.
  H332 Harmful if inhaled.
  H411 Toxic to aquatic life with long lasting effects.

· Department issuing SDS: Dept. Compliance

· Abbreviations and acronyms:
  RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
  ICAO: International Civil Aviation Organisation
  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
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  DNEL: Derived No-Effect Level (REACH)
  PNEC: Predicted No-Effect Concentration (REACH)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  Flam. Liq. 3: Flammable liquids – Category 3
  Acute Tox. 4: Acute toxicity – Category 4
  Skin Corr. 1A: Skin corrosion/irritation – Category 1A
  Skin Corr. 1B: Skin corrosion/irritation – Category 1B
  Eye Dam. 1: Serious eye damage/eye irritation – Category 1
  Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

· * Data compared to the previous version altered.