Material Safety Data Sheet
acc. to OSHA and ANSI

Printing date 05/15/2001 Reviewed on 05/04/2001

1 Identification of substance:

- Product details:

- Trade name: 1,2-Dichlorobenzene

- Stock number: A13881

- Manufacturer/Supplier:
  Alfa Aesar, A Johnson Matthey company
  Johnson Matthey Catalog Company, Inc.
  30 Bond Street
  Ward Hill, MA 01835-8099
  Emergency Phone: (978) 521-6300
  CHEMTREC: (800) 424-9300
  Web Site: www.alfa.com

- Information department: Health, Safety and Environmental Department

- Emergency information:
  During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:

- Chemical characterization:
  Description: (CAS#)

  1,2-Dichlorobenzene (CAS# 95-50-1); 100%

- Identification number(s):
  - EINECS Number: 202-425-9
  - EU Number: 602-034-00-7
3 **Hazards identification**

- **Hazard description:**
  Xn Harmful
  N Dangerous for the environment

- **Information pertaining to particular dangers for man and environment**
  R 22 Harmful if swallowed.
  R 36/37/38 Irritating to eyes, respiratory system and skin.
  R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

4 **First aid measures**

- **After inhalation**
  Supply fresh air. If required, provide artificial respiration. Keep patient warm.
  Seek immediate medical advice.

- **After skin contact**
  Immediately wash with water and soap and rinse thoroughly.
  Seek immediate medical advice.

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

- **After swallowing** Seek immediate medical advice.

5 **Fire fighting measures**

- **Suitable extinguishing agents**
  Use carbon dioxide, extinguishing powder or foam. Water may be ineffective but may be used for cooling exposed containers.

- **Special hazards caused by the material, its products of combustion or resulting gases:**
  In case of fire, the following can be released:
  Hydrogen chloride (HCl)
  Carbon monoxide and carbon dioxide

- **Protective equipment:**
  Wear self-contained respirator.
  Wear fully protective impervious suit.
6 Accidental release measures

- **Person-related safety precautions:**
  Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation.

- **Measures for environmental protection:**
  Do not allow material to be released to the environment without proper governmental permits.

- **Measures for cleaning/collecting:**
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

- **Additional information:**
  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**

- **Information for safe handling:**
  Keep container tightly sealed.
  Store in cool, dry place in tightly closed containers.
  Ensure good ventilation at the workplace.
  Prevent formation of aerosols.

- **Information about protection against explosions and fires:**
  No special measures required.

- **Storage**

- **Requirements to be met by storerooms and receptacles:**
  No special requirements.

- **Information about storage in one common storage facility:**
  Store away from oxidizing agents.
  Keep away from heat and direct sunlight.

- **Further information about storage conditions:**
  Keep container tightly sealed.
  Store in cool, dry conditions in well sealed containers.
8 Exposure controls and personal protection

- Additional information about design of technical systems:
  Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

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

  o-Dichlorobenzene

<table>
<thead>
<tr>
<th></th>
<th>ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TLV</td>
<td>25; 50-STEEL</td>
</tr>
<tr>
<td>Belgium TWA</td>
<td>50 (skin)</td>
</tr>
<tr>
<td>Denmark TWA</td>
<td>50</td>
</tr>
<tr>
<td>Finland TWA</td>
<td>50; 75-STEEL (skin)</td>
</tr>
<tr>
<td>France TWA</td>
<td>50</td>
</tr>
<tr>
<td>Germany TWA</td>
<td>50</td>
</tr>
<tr>
<td>Hungary TWA</td>
<td>50 mg/m3; 100 mg/m3-STEEL (skin)</td>
</tr>
<tr>
<td>Ireland TWA</td>
<td>50</td>
</tr>
<tr>
<td>Netherlands TWA</td>
<td>25, 50-STEEL</td>
</tr>
<tr>
<td>Poland TWA</td>
<td>20 mg/m3</td>
</tr>
<tr>
<td>Russia TWA</td>
<td>50 mg/m3</td>
</tr>
<tr>
<td>Sweden TWA</td>
<td>50</td>
</tr>
<tr>
<td>Switzerland TWA</td>
<td>50; 100-STEEL</td>
</tr>
<tr>
<td>United Kingdom TWA</td>
<td>50</td>
</tr>
<tr>
<td>USA PEL</td>
<td>50-STEEL</td>
</tr>
</tbody>
</table>

Components with limit values that require monitoring at the workplace:

- Additional information: No data

- Personal protective equipment

- General protective and hygienic measures
  The usual precautionary measures for handling chemicals should be followed.
  Keep away from foodstuffs, beverages and feed.
  Remove all soiled and contaminated clothing immediately.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes and skin.

- Breathing equipment:
  Use suitable respirator when high concentrations are present.

- Protection of hands: Impervious gloves

- Eye protection: Safety glasses

- Body protection: Protective work clothing.
9 Physical and chemical properties:

- Form: Oily
- Color: Colorless
- Odor: Pungent

<table>
<thead>
<tr>
<th>Method</th>
<th>Value/Range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>-16.7 °</td>
<td>C</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>179 °</td>
<td>C</td>
</tr>
<tr>
<td>Sublimation temperature / start:</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Flash point:</td>
<td>65 °</td>
<td>C</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>640 °</td>
<td>C</td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>Not determined</td>
<td></td>
</tr>
<tr>
<td>Danger of explosion:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product does not present an explosion hazard.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosion limits:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>2.2 Vol %</td>
<td></td>
</tr>
<tr>
<td>Upper:</td>
<td>12 Vol %</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>at 20 °</td>
<td>1.33 hPa</td>
</tr>
<tr>
<td>Density:</td>
<td>at 20 °</td>
<td>1.306 g/cm³</td>
</tr>
<tr>
<td>Solubility in / Miscibility with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water:</td>
<td>at 20 °</td>
<td>0.1 g/l</td>
</tr>
<tr>
<td>Viscosity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dynamic:</td>
<td>at 20 °</td>
<td>1.32 mPas</td>
</tr>
</tbody>
</table>
10 Stability and reactivity

- Thermal decomposition / conditions to be avoided:
  Decomposition will not occur if used and stored according to
  specifications.

- Materials to be avoided:
  Oxidizing agents
  Light
  Aluminum/aluminum alloys.

- Dangerous reactions
  No dangerous reactions known

- Dangerous products of decomposition:
  Hydrogen chloride (HCl)
  Carbon monoxide and carbon dioxide
11 Toxicological information

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

  1,2-Dichlorobenzene (CAS# 95-50-1); 100%
  Oral: LD50: 4386 mg/kg (mus)
  LD50: 500 mg/kg (rat)
  LD50: 500 mg/kg (rbe)
  LDLo: 2000 mg/kg (gpg)
  Dermal: LD50: 10000 mg/kg (rbe)
  Inhalative: LCLo/24H: 800 ppm/24H (gpg)
  LCLo/7H: 821 ppm/7H (rat)

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

- **Other information (about experimental toxicology):**
  Reproductive effects have been observed on tests with laboratory animals.
  Mutagenic effects have been observed on tests with laboratory animals.

- **Subacute to chronic toxicity:**
  Chlorobenzenes are mild irritants and are strongly narcotic.
  They may cause central nervous system effects, rapid respirations and a rapid, weak pulse. Prolonged exposure may cause blood, liver and kidney damage.

- **Additional toxicological information:**
  To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
  EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.
  IARC-3: Not classifiable as to carcinogenicity to humans.
  ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of it's carcinogenicity in humans and/or animals.
  The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for components in this product.
12 Ecological information:

- **General notes:**
  Also poisonous for fish and plankton in water bodies. Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations

- **Product:**
- **Recommendation**
  Consult state, local or national regulations for proper disposal.

- **Uncleaned packagings:**
- **Recommendation:**
  Disposal must be made according to official regulations.
14 Transport information

- DOT regulations:
  - Hazard class: 6.1
  - Identification number: UN1591
  - Packing group: III
  - Hazardous substance: 100 lbs, 45.4 kg
  - Proper shipping name (technical name): O-Dichlorobenzene

- Land transport ADR/RID (cross-border)
  - ADR/RID class: 6.1 Toxic substances
  - Item: 15c
  - Danger code (Kemler): 60
  - UN-Number: 1591
  - Description of goods: O-Dichlorobenzene

- Maritime transport IMDG:
  - IMDG Class: 6.1
  - Page: 6125
  - UN Number: 1591
  - Packaging group: III
  - EMS Number: 6.1-02
  - MFAG: 340
  - Proper shipping name: O-Dichlorobenzene

- Air transport ICAO-TI and IATA-DGR:
  - ICAO/IATA Class: 6.1
  - UN/ID Number: 1591
  - Packaging group: III
  - Proper shipping name: O-Dichlorobenzene
15 Regulations

- **Product related hazard informations:**

- **Hazard symbols:**
  Xn Harmful N Dangerous for the environment

- **Risk phrases:**
  22 Harmful if swallowed.
  36/37/38 Irritating to eyes, respiratory system and skin.
  50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

- **Safety phrases:**
  23 Do not breathe gas/fumes/vapour/spray.
  60 This material and its container must be disposed of as hazardous waste.
  61 Avoid release to the environment. Refer to special instructions/Safety data sheets

- **National regulations**
  All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory.

- **Information about limitation of use:**
  For use only by technically qualified individuals.
16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

- **Department issuing MSDS:** Health, Safety and Environmental Department.
- **Contact:** Darrell R. Sanders