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

1.1 Product identifiers

Product name: \( m \)-Xylylenediamine

Product Number: X1202

Brand: Aldrich

CAS-No.: 1477-55-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.

3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone: +1 314 771-5765

Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Inhalation (Category 4), H332

Skin corrosion (Category 1B), H314

Serious eye damage (Category 1), H318

Skin sensitization (Sub-category 1B), H317

Short-term (acute) aquatic hazard (Category 3), H402

Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the US and Canada

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>1,3-Bis(aminomethyl)benzene</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a,a’-Diamino-m-xylene</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formula</th>
<th>( \text{C}<em>{8}\text{H}</em>{12}\text{N}_{2} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>136.19 g/mol</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>1477-55-0</td>
</tr>
<tr>
<td>EC-No.</td>
<td>216-032-5</td>
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</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
</table>

Pictogram

Signal Word Danger

Hazard statement(s)
- H302 + H332 Harmful if swallowed or inhaled.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)
- P261 Avoid breathing mist or vapors.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P272 Contaminated work clothing must not be allowed out of the workplace.
- P273 Avoid release to the environment.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
- P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
- P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
- P363 Wash contaminated clothing before reuse.
- P405 Store locked up.
- P501 Dispose of contents/ container to an approved waste disposal plant.
**SECTION 4: First aid measures**

**4.1 Description of first-aid measures**

**General advice**
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

**If inhaled**
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

**In case of skin contact**
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.

**In case of eye contact**
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

**If swallowed**
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

**4.2 Most important symptoms and effects, both acute and delayed**
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

**4.3 Indication of any immediate medical attention and special treatment needed**
No data available

**SECTION 5: Firefighting measures**

**5.1 Extinguishing media**

**Suitable extinguishing media**
Water Foam Carbon dioxide (CO2) Dry powder

**Unsuitable extinguishing media**
For this substance/mixture no limitations of extinguishing agents are given.
5.2 **Special hazards arising from the substance or mixture**
- Carbon oxides
- Nitrogen oxides (NOx)
- Combustible.
  - Vapors are heavier than air and may spread along floors.
  - Forms explosive mixtures with air on intense heating.
  - Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 **Advice for firefighters**
- Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 **Further information**
- Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

---

**SECTION 6: Accidental release measures**

6.1 **Personal precautions, protective equipment and emergency procedures**
- Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
- For personal protection see section 8.

6.2 **Environmental precautions**
- Do not let product enter drains.

6.3 **Methods and materials for containment and cleaning up**
- Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent and neutralising material (e.g. Chemizorb® OH⁻, Merck Art. No. 101596). Dispose of properly. Clean up affected area.

6.4 **Reference to other sections**
- For disposal see section 13.

---

**SECTION 7: Handling and storage**

7.1 **Precautions for safe handling**
- **Advice on safe handling**
  - Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.
- **Hygiene measures**
  - Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
  - For precautions see section 2.2.

7.2 **Conditions for safe storage, including any incompatibilities**
- **Storage conditions**
  - Tightly closed.
- **Storage class**
  - Storage class (TRGS 510): 8A: Combustible, corrosive hazardous materials
7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>m-phenylenebis(methylamine)</td>
<td>1477-55-0</td>
<td>C</td>
<td>0.018 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remarks</td>
<td>Danger of cutaneous absorption</td>
<td>C</td>
<td>0.1 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>Potential for dermal absorption</td>
<td>C</td>
<td>0.1 mg/m3</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
required

Body Protection
protective clothing

Respiratory protection
Recommended Filter type: Filter type ABEK
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance
   Form: clear, liquid
   Color: colorless

b) Odor
   amine-like

c) Odor Threshold
   No data available

d) pH
   12 at 1 g/l at 20 °C (68 °F)

e) Melting point/freezing point
   Melting point: 14 °C (57 °F) - OECD Test Guideline 102

f) Initial boiling point and boiling range
   265 °C 509 °F at 993 hPa - lit.

g) Flash point
   113 °C (235 °F) - closed cup

h) Evaporation rate
   No data available

i) Flammability (solid, gas)
   No data available

j) Upper/lower flammability or explosive limits
   No data available

k) Vapor pressure
   0.01 hPa at 25 °C (77 °F) - OECD Test Guideline 104

l) Vapor density
   No data available

m) Density
   1.032 g/cm3 at 25 °C (77 °F) - lit.
   Relative density
   No data available

n) Water solubility
   100 g/l at 20 °C (68 °F) - OECD Test Guideline 105 - miscible in all proportions

o) Partition coefficient: n-octanol/water
   log Pow: ca.0.18 at 25 °C (77 °F) - OECD Test Guideline 107 - Bioaccumulation is not expected.

p) Autoignition temperature
   395 - 405 °C (743 - 761 °F) at 1,006.9 - 1,013.1 hPa

q) Decomposition temperature
   No data available

r) Viscosity
   6.78 mm2/s at 20 °C (68 °F) - OECD Test Guideline 114 -

s) Explosive properties
   No data available

t) Oxidizing properties
   none

9.2 Other safety information

No data available
SECTION 10: Stability and reactivity

10.1 Reactivity
Forms explosive mixtures with air on intense heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Strong heating.

10.5 Incompatible materials
acids, Acid chlorides, Acid anhydrides, Oxidizing agents, Chloroformates

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 930 mg/kg
Remarks: (RTECS)
Acute toxicity estimate Inhalation - 4 h - 11 mg/l - vapor

(Expert judgment)
Inhalation: No data available
LD50 Dermal - Rat - male and female - > 3,100 mg/kg
Remarks: (ECHA)

Skin corrosion/irritation
Skin - Rat
Result: Causes burns. - 4 h

Serious eye damage/eye irritation
Remarks: Causes serious eye damage.

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: positive
(OECD Test Guideline 429)

Germ cell mutagenicity
Test Type: Ames test
Test system: Escherichia coli/Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: without metabolic activation
Method: OECD Test Guideline 473
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: In vivo micronucleus test
Species: Mouse
Cell type: Bone marrow
Method: OECD Test Guideline 474
Result: negative

**Carcinogenicity**

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
Corrosive to the respiratory tract.

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

### 11.2 Additional Information

RTECS: PF8970000
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

### SECTION 12: Ecological information

#### 12.1 Toxicity

Toxicity to fish
- semi-static test LC50 - Oryzias latipes (Orange-red killifish) - 87.6 mg/l - 96 h
  (OECD Test Guideline 203)

Toxicity to daphnia
- static test EC50 - Daphnia magna (Water flea) - 15.2 mg/l - 48 h
and other aquatic invertebrates (OECD Test Guideline 202)
Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata (algae) - 33.3 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria static test EC50 - activated sludge - > 1,000 mg/l - 0.5 h (OECD Test Guideline 209)
Toxicity to daphnia and other aquatic invertebrates semi-static test LC50 - Daphnia magna (Water flea) - 6.77 mg/l - 21 d (OECD Test Guideline 211)

12.2 Persistence and degradability
Biodegradability aerobic - Exposure time 28 d Result: 49 % - Not readily biodegradable. (OECD Test Guideline 301B)

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 2735 Class: 8 Packing group: II
Proper shipping name: Polyamines, liquid, corrosive, n.o.s. (m-phenylenebis(methylamine))
Reportable Quantity (RQ):
Poison Inhalation Hazard: No
IMDG
UN number: 2735  Class: 8  Packing group: II EMS-No: F-A, S-B
Proper shipping name: POLYAMINES, LIQUID, CORROSIVE, N.O.S. (m-phenylenebis(methylamine))

IATA
UN number: 2735  Class: 8  Packing group: II
Proper shipping name: Polyamines, liquid, corrosive, n.o.s. (m-phenylenebis(methylamine))

SECTION 15: Regulatory information

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>m-phenylenebis(methylamine)</td>
<td>1477-55-0</td>
<td>1993-02-16</td>
</tr>
</tbody>
</table>

Pennsylvania Right To Know Components

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>m-phenylenebis(methylamine)</td>
<td>1477-55-0</td>
<td>1993-02-16</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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