SAFETY DATA SHEET

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

1.1 Product identifiers

Product name: Aniline

Product Number: 242284
Brand: Sigma-Aldrich
Index-No.: 612-008-00-7
CAS-No.: 62-53-3

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)

- Flammable liquids (Category 4), H227
- Acute toxicity, Oral (Category 3), H301
- Acute toxicity, Inhalation (Category 3), H331
- Acute toxicity, Dermal (Category 3), H311
- Serious eye damage (Category 1), H318
- Skin sensitization (Category 1), H317
- Germ cell mutagenicity (Category 2), H341
- Carcinogenicity (Category 2), H351
- Specific target organ toxicity - repeated exposure (Category 1), Blood, H372
- Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 1), H410
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 **GHS Label elements, including precautionary statements**

**Pictogram**

<table>
<thead>
<tr>
<th>Signal Word</th>
<th>Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard statement(s)</td>
<td>Combustible liquid.</td>
</tr>
<tr>
<td><strong>H227</strong></td>
<td>Toxic if swallowed, in contact with skin or if inhaled.</td>
</tr>
<tr>
<td><strong>H301 + H311 + H331</strong></td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td><strong>H317</strong></td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td><strong>H341</strong></td>
<td>Suspected of causing genetic defects.</td>
</tr>
<tr>
<td><strong>H351</strong></td>
<td>Suspected of causing cancer.</td>
</tr>
<tr>
<td><strong>H372</strong></td>
<td>Causes damage to organs (Blood) through prolonged or repeated exposure.</td>
</tr>
<tr>
<td><strong>H410</strong></td>
<td>Very toxic to aquatic life with long lasting effects.</td>
</tr>
<tr>
<td>Precautionary statement(s)</td>
<td></td>
</tr>
<tr>
<td><strong>P201</strong></td>
<td>Obtain special instructions before use.</td>
</tr>
<tr>
<td><strong>P202</strong></td>
<td>Do not handle until all safety precautions have been read and understood.</td>
</tr>
<tr>
<td><strong>P210</strong></td>
<td>Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.</td>
</tr>
<tr>
<td><strong>P260</strong></td>
<td>Do not breathe mist or vapors.</td>
</tr>
<tr>
<td><strong>P264</strong></td>
<td>Wash skin thoroughly after handling.</td>
</tr>
<tr>
<td><strong>P270</strong></td>
<td>Do not eat, drink or smoke when using this product.</td>
</tr>
<tr>
<td><strong>P271</strong></td>
<td>Use only outdoors or in a well-ventilated area.</td>
</tr>
<tr>
<td><strong>P272</strong></td>
<td>Contaminated work clothing must not be allowed out of the workplace.</td>
</tr>
<tr>
<td><strong>P273</strong></td>
<td>Avoid release to the environment.</td>
</tr>
<tr>
<td><strong>P280</strong></td>
<td>Wear protective gloves/ protective clothing/ eye protection/ face protection.</td>
</tr>
<tr>
<td><strong>P301 + P310 + P330</strong></td>
<td>IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.</td>
</tr>
<tr>
<td><strong>P302 + P352 + P312</strong></td>
<td>IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/ doctor if you feel unwell.</td>
</tr>
<tr>
<td><strong>P304 + P340 + P311</strong></td>
<td>IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.</td>
</tr>
<tr>
<td><strong>P305 + P351 + P338 + P310</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>P308 + P313</strong></td>
<td>If exposed or concerned: Get medical advice/ attention.</td>
</tr>
<tr>
<td><strong>P333 + P313</strong></td>
<td>If skin irritation or rash occurs: Get medical advice/ attention.</td>
</tr>
<tr>
<td><strong>P362</strong></td>
<td>Take off contaminated clothing and wash before reuse.</td>
</tr>
<tr>
<td><strong>P370 + P378</strong></td>
<td>In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.</td>
</tr>
<tr>
<td><strong>P391</strong></td>
<td>Collect spillage.</td>
</tr>
<tr>
<td><strong>P403 + P233</strong></td>
<td>Store in a well-ventilated place. Keep container tightly closed.</td>
</tr>
<tr>
<td><strong>P403 + P235</strong></td>
<td>Store in a well-ventilated place. Keep cool.</td>
</tr>
<tr>
<td><strong>P405</strong></td>
<td>Store locked up.</td>
</tr>
</tbody>
</table>
2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
Rapidly absorbed through skin.

SECTION 3: Composition/information on ingredients

3.1 Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aniline</td>
<td>Flam. Liq. 4; Acute Tox. 3; Eye Dam. 1; Skin Sens. 1; Muta. 2; Carc. 2; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H227, H301, H331, H311, H318, H317, H341, H351, H372, H400, H410</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

Concentration limits:
>= 1 %: STOT RE 1, H372; 0.2 - < 1 %: STOT RE 2, H373;
M-Factor - Aquatic Acute: 1 - Aquatic Chronic: 1

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

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
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

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
Remove container from danger zone and cool with water. 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. Keep away from heat and sources of ignition. 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.
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.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Handle under inert gas. Protect from moisture. Light sensitive.

Storage class
Storage class (TRGS 510): 6.1A: Combustible, acute toxic Cat. 1 and 2 / very toxic 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

Ingredients with workplace 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>Aniline</td>
<td>62-53-3</td>
<td>TWA</td>
<td>2 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td>Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption</td>
</tr>
</tbody>
</table>
### California permissible exposure limits for chemical contaminants (Title 8, Article 107)

| Skin | 2 ppm 7.6 mg/m³ |

| TWA | 5 ppm 19 mg/m³ |

### USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

| Skin designation | Potential Occupational Carcinogen |

### Biological occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Parameters</th>
<th>Value</th>
<th>Biological specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aniline</td>
<td>62-53-3</td>
<td>Aniline</td>
<td>0.5 mg/l</td>
<td>Urine</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
</tbody>
</table>

**Remarks**

End of shift (As soon as possible after exposure ceases)

### 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**
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

- **Full contact**
  - Material: butyl-rubber
  - Minimum layer thickness: 0.7 mm
  - Break through time: 480 min
  - Material tested: Butoject® (KCL 898)

- **Splash contact**
  - Material: Latex gloves
  - Minimum layer thickness: 0.6 mm
  - Break through time: 60 min
  - Material tested: Lapren® (KCL 706 / Aldrich Z677558, Size M)
**Body Protection**
protective clothing

**Respiratory protection**
Recommended Filter type: Filter A-(P3)
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.

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**SECTION 9: Physical and chemical properties**

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

a) Appearance Form: liquid
b) Odor No data available
c) Odor Threshold 2.44 ppm
d) pH 8.8 at 36 g/l at 20 °C (68 °F)
e) Melting point/freezing point Melting point/range: -6 °C (21 °F) - lit.
f) Initial boiling point and boiling range 184 °C 363 °F - lit.
g) Flash point 70 °C (158 °F) - closed cup
h) Evaporation rate No data available
i) Flammability (solid, gas) No data available
j) Upper/lower flammability or explosive limits Upper explosion limit: 23 % (V)
Lower explosion limit: 1.3 % (V)
k) Vapor pressure 0.49 hPa at 20 °C (68 °F)
l) Vapor density 3.22 - (Air = 1.0)
m) Density 1.022 g/cm3 at 25 °C (77 °F) - lit.
   Relative density No data available
n) Water solubility soluble
o) Partition coefficient: n-octanol/water log Pow: 0.91 - Bioaccumulation is not expected.
p) Autoignition temperature No data available
q) Decomposition 190 °C (374 °F) -
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
Risk of explosion with:
- Oxidizing agents
- Peroxi compounds
- Perchlorates
- Perchloric acid
- Nitric acid
- Oxygen
- Organic nitro compounds
- Benzene/benzene derivatives
- Nitrates
Exothermic reaction with:
- Semimetallic halides
- Acetic anhydride
- Acids
Risk of ignition or formation of inflammable gases or vapours with:
- Fluorine
- Alkaline earth metals
- Alkali metals

10.4 Conditions to avoid
Avoid moisture.
Strong heating.

10.5 Incompatible materials
Strong oxidizing agents

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 - 250 mg/kg
Remarks: (RTECS)
LC50 Inhalation - Rat - 4 h - 3.3 mg/l - vapor

Remarks: (Lit.)
(Regulation (EC) No 1272/2008, Annex VI)
LC50 Inhalation - Rat - 4 h - 3.3 mg/l - vapor

Remarks: (Lit.)
(Regulation (EC) No 1272/2008, Annex VI)
LD50 Dermal - Rabbit - 840 mg/kg
Remarks: (Lit.)

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation
Remarks: (Lit.)

**Serious eye damage/eye irritation**
Remarks: Causes serious eye damage.
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Respiratory or skin sensitization**
May cause allergic skin reaction. Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Germ cell mutagenicity**
Suspected of causing genetic defects.
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: 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: positive
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: positive
Test Type: unscheduled DNA synthesis assay
Test system: rat hepatocytes
Metabolic activation: without metabolic activation
Result: negative
Remarks: (ECHA)
Test Type: Micronucleus test  
Species: Rat  
Cell type: Bone marrow  
Application Route: Oral  
Method: OECD Test Guideline 474  
Result: positive

Test Type: Micronucleus test  
Species: Mouse  
Cell type: Bone marrow  
Application Route: Intraperitoneal  
Method: OECD Test Guideline 475  
Result: positive

Test Type: Chromosome aberration test  
Species: Rat  
Cell type: Bone marrow  
Application Route: Oral  
Method: OECD Test Guideline 475  
Result: positive

Test Type: dominant lethal test  
Species: Rat  
Application Route: Intraperitoneal  
Method: OECD Test Guideline 478  
Result: negative

**Carcinogenicity**
Suspected of causing cancer.

IARC: 2A - Group 2A: Probably carcinogenic to humans (Aniline)
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**
No data available

**Specific target organ toxicity - repeated exposure**
Causes damage to organs through prolonged or repeated exposure.
- Blood
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Aspiration hazard**
No data available

11.2 Additional Information

RTECS: BW6650000
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., Cyanosis,
SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish
flow-through test LC50 - Oncorhynchus mykiss (rainbow trout) - 10.6 mg/l - 96.0 h
Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates
semi-static test EC50 - Daphnia magna (Water flea) - 0.16 mg/l - 48 h
Remarks: (US-EPA)

Toxicity to algae
static test ErC50 - Chlorella pyrenoidosa - 175 mg/l - 72 h
(OECD Test Guideline 201)

Toxicity to bacteria
EC50 - activated sludge - 2,500 mg/l - 10 min
Remarks: (Lit.)

Toxicity to fish (Chronic toxicity)
flow-through test NOEC - Pimephales promelas (fathead minnow) - 0.39 mg/l - 32 d
Remarks: (ECHA)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
flow-through test NOEC - Daphnia magna (Water flea) - 0.01 mg/l - 21 d
(US-EPA)

12.2 Persistence and degradability

Biodegradability
aerobic - Exposure time 30 d
Result: ca.90 % - Readily biodegradable.
(OECD Test Guideline 301D)

12.3 Bioaccumulative potential

Bioaccumulation
Danio rerio (zebra fish) - < 0.1 mg/l (Aniline)

Bioconcentration factor (BCF): 2.6

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: 1547  Class: 6.1  Packing group: II
Proper shipping name: Aniline
Reportable Quantity (RQ): 5000 lbs
Marine pollutant: yes  Poison Inhalation Hazard: No

IMDG
UN number: 1547  Class: 6.1  Packing group: II
Proper shipping name: ANILINE
Marine pollutant: yes
Marine pollutant: yes
EMS-No: F-A, S-A

IATA
UN number: 1547  Class: 6.1  Packing group: II
Proper shipping name: Aniline

SECTION 15: Regulatory information

SARA 302 Components
Aniline  CAS-No.  Revision Date
62-53-3  2007-03-01

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

Aniline  CAS-No.  Revision Date
62-53-3  2007-03-01

SARA 311/312 Hazards

Sigma-Aldrich - 242284
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aniline</td>
<td>62-53-3</td>
<td>2007-03-01</td>
</tr>
</tbody>
</table>

**Pennsylvania Right To Know Components**

<table>
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<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**California Prop. 65 Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aniline</td>
<td>62-53-3</td>
<td>2007-09-28</td>
</tr>
</tbody>
</table>

, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.Aniline

**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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Version: 6.13 Revision Date: 08/30/2023 Print Date: 10/07/2023