

# **MSDS – MATERIAL SAFETY DATA SHEET**

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## **ANILINE**

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### **1. Product Identification**

**Synonyms:** Aminobenzene; aniline oil; phenylamine; aniline technical special

**CAS No.:** 62-53-3

**Molecular Weight:** 93.12

**Chemical Formula:** C<sub>6</sub>H<sub>5</sub>NH<sub>2</sub>

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### **2. Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
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Aniline	62-53-3	99 - 100%	Yes

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### **3. Hazards Identification**

#### **Emergency Overview**

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**DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE METHEMOGLOBINEMIA. AFFECTS BLOOD, CARDIOVASCULAR SYSTEM, CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS.**

**SAFETY DATA** Ratings (Provided here for your convenience)

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Health Rating: 3 - Severe (Poison)

Flammability Rating: 2 - Moderate

Reactivity Rating: 2 - Moderate  
Contact Rating: 3 - Severe (Life)  
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD;  
PROPER GLOVES; CLASS B EXTINGUISHER  
Storage Color Code: Red (Flammable)

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### **Potential Health Effects**

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#### **Inhalation:**

Toxic. Affects ability of blood to carry oxygen. Symptoms may include bluish discoloration of lips and tongue, severe headache, nausea, confusion, dizziness, shock, respiratory paralysis, death.

#### **Ingestion:**

Toxic. Lethal dose may be as little as one gram. Symptoms of ingestion parallel those of inhalation exposure.

#### **Skin Contact:**

May be absorbed through skin. Symptoms of skin absorption parallel those from inhalation exposure. May cause skin irritation. Local contact may cause dermatitis.

#### **Eye Contact:**

Vapor is an eye irritant. May cause tearing, blurred vision. Splashes may cause corneal damage.

#### **Chronic Exposure:**

Aniline is a blood toxin, causing hemoglobin to convert to methemoglobin, resulting in cyanosis. Lengthy or repeated exposures may result in decreased appetite, anemia, weight loss, nervous system affects, and kidney, liver and bone marrow damage. Any exposure may cause an allergic skin reaction.

#### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance. A NIOSH study reported an excess bladder cancer risk in workers exposed to aniline in combination with other dyestuffs and intermediates, although it is not clear which of these materials, or combinations, were responsible for the higher incidence of bladder cancer. Based on the results of this study, historical epidemiology evidence which shows no correlation of pure aniline with bladder cancer, and experimental test results, it was concluded that aniline, most likely, is not responsible for the increased incidence of bladder tumors in the NIOSH study.

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## **4. First Aid Measures**

#### **Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do not give mouth to mouth resuscitation. CALL A PHYSICIAN IMMEDIATELY.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Thoroughly clean shoes before reuse. Get medical attention immediately.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

**Fire:**

Flash point: 70C (158F) CC

Autoignition temperature: 615C (1139F)

Flammable limits in air % by volume:

l<sub>el</sub>: 1.3; u<sub>el</sub>: 11.0

Combustible liquid and vapor. Flammable when exposed to heat or flame. Contact with strong oxidizers may cause fire or explosion.

**Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Sealed containers may rupture when heated.

**Fire Extinguishing Media:**

Dry chemical, foam, carbon dioxide, or water spray.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## 7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Protect from freezing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL): 5 ppm (TWA) skin

-ACGIH Threshold Limit Value (TLV): 2 ppm (TWA) skin

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134).

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

### **Other Control Measures:**

Provide clean work clothes daily to workers who regularly use this material. Wash hands before eating and do not eat, drink, or smoke in workplace.

## 9. Physical and Chemical Properties

**Appearance:** Colorless, oily liquid. Darkens on exposure to light or air.

**Odor:** Weakly amine.

**Solubility:** 3.5 gm in 100 gm water @ 20C (68F).  
**Specific Gravity:** 1.022 @ 68F (20C)  
**pH:** 8.1 (0.2 M solution)  
**% Volatiles by volume @ 21C (70F):** 100  
**Boiling Point:** 184C (363F)  
**Melting Point:** -6.2C (21F)  
**Vapor Density (Air=1):** 3.22  
**Vapor Pressure (mm Hg):** 0.6 @ 20C (68F)  
**Evaporation Rate (BuAc=1):** < 1

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Discolors on exposure to light.

**Hazardous Decomposition Products:**

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong acids and strong oxidizers, albumin, solutions of iron, zinc, aluminum, toluene diisocyanate, and alkalis. Ignites spontaneously in the presence of red fuming nitric acid, and with sodium.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

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## 11. Toxicological Information

Oral rat LD50: 250 mg/kg; skin rabbit LD50: 820 mg/kg; inhalation mouse LC50: 175 ppm (7 hours); irritation skin rabbit: 20 mg/24H moderate; irritation eye rabbit 102 mg severe. Investigated as a tumorigen, mutagen, and reproductive effector. Carcinogenic determination: limited evidence in experimental animals (IARC 27, 54, 1982). Aniline is listed by the International Agency for Research on Cancer (IARC) in Category 3, i. e., "Cannot be classified as to its carcinogenicity in humans." (IARC, Supplement 4, 1982).

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Aniline (62-53-3)	No	No	3

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## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When

released into the soil, this material may leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released into water, this material is expected to readily biodegrade. When released into water, this material is expected to have a half-life between 10 and 30 days. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily degraded by photolysis. When released into the air, this material is expected to have a half-life of less than 1 day. When released into the air, this material is not expected to adversely affect the ozone layer.

**Environmental Toxicity:**

This material is expected to be very toxic to terrestrial life. This material is expected to be very toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l. The EC50/48-hour values for daphnia are less than 1 mg/l.

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## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

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## 14. Transport Information

**Domestic (Land, D.O.T.)**

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**Proper Shipping Name:** ANILINE

**Hazard Class:** 6.1

**UN/NA:** UN1547

**Packing Group:** II

**Information reported for product/size:** 2.5L

**International (Water, I.M.O.)**

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**Proper Shipping Name:** ANILINE

**Hazard Class:** 6.1

**UN/NA:** UN1547

**Packing Group:** II

**Information reported for product/size:** 2.5L

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## 15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                TSCA  EC   Japan  Australia
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Aniline (62-53-3)        Yes   Yes  Yes    Yes
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-----\Chemical Inventory Status - Part 2\-----
Ingredient                Korea  DSL   --Canada--
                        NDSL  Phil.
-----
Aniline (62-53-3)        Yes   Yes  No     Yes
```

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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-  -SARA 313-
                        RQ    TPQ    List  Chemical Catg.
-----
Aniline (62-53-3)        5000  1000  Yes    No
```

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-----\Federal, State & International Regulations - Part 2\-----
Ingredient                CERCLA  -RCRA-  -TSCA-
                        261.33  8(d)
-----
Aniline (62-53-3)        5000    U012    No
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Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes  
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No  
Reactivity: No (Pure / Liquid)

### **WARNING:**

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

**Australian Hazchem Code:** 3X

**Poison Schedule:** S6

### **WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 2 Reactivity: 0

### **Label Hazard Warning:**

DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. COMBUSTIBLE LIQUID AND VAPOR. MAY CAUSE METHEMOGLOBINEMIA. AFFECTS BLOOD, CARDIOVASCULAR SYSTEM, CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS.

### **Label Precautions:**

Do not breathe vapor.

Do not get in eyes, on skin, or on clothing.

Keep away from heat and flame.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

In all cases call a physician immediately. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. IF INHALED, remove to fresh air. If not breathing, give artificial respiration. DO NOT GIVE MOUTH-TO-MOUTH RESUSCITATION. If breathing is difficult, give oxygen. Keep patient warm and at rest.

**Product Use:**

Laboratory Reagent.

**Revision Information:** No Changes.

**Disclaimer:**

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