SAFETY DATA SHEET

2-Ethyl Hexanol

CAS No.: 104-76-7

EINECS No.: 203-234-3

Molecular Formula: C_8 H_{18} O

Molecular Weight: 130.23

1. Identification of the Substance/ Mixture and of the Company/Undertaking

1.1 Product identifier

- **Product Name**: 2-Ethylhexanol (Isooctanol)
- **Synonyms**: 2-Ethyl-1-hexanol, Isooctyl alcohol, 2-EH
- **CAS-No.**: 104-76-7

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

- **Recommended Use**: Chemical intermediate, solvent, raw material for plasticizers, coatings, lubricants
- **Uses advised against**: Consumer use, general public application

1.3 Details of the supplier of the safety data sheet

- **Supplier**: Shandong Changxing Plastic Additives Co., Ltd.
- **Emergency Telephone**: +86-15054870715

2. Hazards Identification

2.1 Classification of the substance or mixture

- **GHS Classification**:
  - Flammable liquids (Category 4)
  - Skin irritation (Category 2)
  - Serious eye damage/eye irritation (Category 1)
  - Specific target organ toxicity – single exposure (Category 3, respiratory tract irritation)
  - Aquatic Chronic Toxicity (Category 3)

2.2 GHS Label elements

- **Signal Word**: Danger
- **Hazard Statements**:
  - H227: Combustible liquid
  - H315: Causes skin irritation

- H318: Causes serious eye damage
- H335: May cause respiratory irritation
- H412: Harmful to aquatic life with long lasting effects

- **Precautionary Statements**:
  - P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - P264: Wash skin thoroughly after handling.
  - P271: Use only outdoors or in a well-ventilated area.
  - P280: Wear protective gloves/eye protection/face protection.
  - P302+P352: IF ON SKIN: Wash with plenty of soap and water.
  - P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P332+P313: If skin irritation occurs: Get medical advice/attention.
  - P337+P313: If eye irritation persists: Get medical advice/attention.
  - P391: Collect spillage.
  - P403+P235: Store in a well-ventilated place. Keep cool.
  - P501: Dispose of contents/container to approved waste disposal facility.

2.3 Other hazards

- None identified

3. Composition/Information on Ingredients

- **Substance**: 2-Ethylhexanol
- **CAS-No.**: 104-76-7
- **Concentration**: ≥99.0% (Industrial grade)

4. First Aid Measures

4.1 Description of first aid measures

- **Inhalation**: Remove victim to fresh air. Keep at rest. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention immediately.
- **Skin Contact**: Remove contaminated clothing and shoes. Wash skin with plenty of water and soap for at least 15 minutes. Get medical attention if irritation occurs.
- **Eye Contact**: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Remove contact lenses if present. Get medical attention immediately.

- **Ingestion**: Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

- **Acute**: Eye and skin irritation, respiratory tract irritation, headache, dizziness, nausea, vomiting.
- **Delayed**: May cause liver and kidney damage after prolonged exposure

4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically. No specific antidote.

5. Fire-Fighting Measures

5.1 Extinguishing media

- **Suitable**: Alcohol-resistant foam, dry chemical, carbon dioxide, water spray.
- **Unsuitable**: Straight water jet (may spread fire).

5.2 Special hazards arising from the substance or mixture

- Combustible liquid. Vapors may form explosive mixture with air.
- Hazardous combustion products: Carbon monoxide (CO), carbon dioxide (CO_2)

5.3 Advice for firefighters

- Wear self-contained breathing apparatus and full protective clothing.
- Use water spray to cool exposed containers.
- Move containers from fire area if possible without risk.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

- Evacuate personnel to safe areas.
- Eliminate all ignition sources (no smoking, sparks, flames).
- Provide adequate ventilation.
- Wear personal protective equipment.

6.2 Environmental precautions

- Prevent entry into sewers, watercourses, or low-lying areas.
- Contain spill to prevent environmental contamination.

6.3 Methods and material for containment and cleaning up

- **Small spill**: Absorb with inert material (sand, earth, diatomaceous earth). Collect in suitable containers for disposal.

- **Large spill**: Dike area with sand or earth. Transfer to storage tanks using explosion-proof pumps.
- Do not discharge into drains or waterways

7. Handling and Storage

7.1 Precautions for safe handling

- Handle in closed systems. Use explosion-proof ventilation.
- Avoid contact with skin, eyes, clothing.
- Do not breathe vapor. Use only in well-ventilated areas.
- Keep away from heat, sparks, open flames, hot surfaces.
- Ground and bond containers during transfer.
- Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

- **Storage**: Store in cool, dry, well-ventilated warehouse.
- **Temperature**: Keep at 0-49°C (32-120°F)
- **Incompatible materials**: Strong oxidizing agents, strong acids
- **Packaging**: Store in tightly closed steel drums or tanks.
- Keep away from foodstuffs, beverages, and feed.

8. Exposure Controls/Personal Protection

8.1 Control parameters

- **Occupational Exposure Limits**:
  - OSHA PEL: None established
  - NIOSH REL: TWA 50 ppm (270 mg/m³) (skin)
  - ACGIH TLV: TWA 50 ppm (270 mg/m³) (skin)

8.2 Exposure controls

- **Engineering Measures**: Process enclosure, local exhaust ventilation.
- **Personal Protective Equipment**:
  - **Respiratory Protection**: Wear NIOSH-approved respirator if exposure limits exceeded.
  - **Hand Protection**: Chemical-resistant gloves (nitrile, butyl rubber).
  - **Eye Protection**: Safety goggles, face shield.
  - **Skin/Body Protection**: Protective clothing, boots.
  - **Hygiene Measures**: Wash hands before eating, smoking, drinking.

9. Physical and Chemical Properties

- **Appearance**: Clear, colorless liquid
- **Odor**: Mild, characteristic alcohol odor
- **Melting Point**: -76°C (-104.8°F)
- **Boiling Point**: 183-186°C (361-367°F)
- **Flash Point**: 81°C (178°F) (closed cup)
- **Autoignition Temperature**: 288°C (550°F)
- **Flammable Limits (in air)**: Lower 0.8 vol%, Upper 7.6 vol%
- **Density/Specific Gravity**: 0.833-0.836 (20°C, water=1)
- **Vapor Density**: 4.49 (air=1)
- **Vapor Pressure**: 0.13 kPa (20°C)
- **Solubility in Water**: ~1 g/L (20°C, slightly soluble)
- **Solubility**: Miscible with most organic solvents (alcohols, ethers, ketones)
- **Partition Coefficient (n-octanol/water)**: log P = 3.0
- **Evaporation Rate**: Slower than water

10. Stability and Reactivity

10.1 Reactivity

- Stable under normal conditions.

10.2 Chemical stability

- Stable.

10.3 Possibility of hazardous reactions

- Reacts violently with strong oxidizing agents.

10.4 Conditions to avoid

- Heat, flames, sparks, incompatible materials.

10.5 Incompatible materials

- Strong oxidizing agents, strong acids, acid chlorides, acid anhydrides

10.6 Hazardous decomposition products

- Carbon monoxide, carbon dioxide.

11. Toxicological Information

11.1 Information on toxicological effects

- **Acute Toxicity**:
  - Oral LD_{50} (rat): 3,730 mg/kg
  - Dermal LD_{50} (rabbit): >2,000 mg/kg
- **Skin Corrosion/Irritation**: Causes skin irritation (Category 2)
- **Serious Eye Damage/Irritation**: Causes serious eye damage (Category 1)
- **Respiratory/Skin Sensitization**: May cause skin sensitization
- **Germ Cell Mutagenicity**: Not mutagenic in bacterial and mammalian tests
- **Carcinogenicity**: No evidence of carcinogenicity in animal studies
- **Reproductive Toxicity**: No evidence of impaired fertility or developmental toxicity
- **Specific Target Organ Toxicity (Single Exposure)**: Respiratory tract irritation
- **Specific Target Organ Toxicity (Repeated Exposure)**: May cause liver and kidney damage
- **Aspiration Hazard**: Low risk

12. Ecological Information

12.1 Toxicity

- **Fish Toxicity**: LC_{50} (96h) = 17-25 mg/L (fish)
- **Aquatic Invertebrates**: EC_{50} (48h) = 39 mg/L (Daphnia magna)
- **Aquatic Plants**: EC_{50} (72h) = 16.6 mg/L (algae growth inhibition)

12.2 Persistence and degradability

- **Biodegradation**: Readily biodegradable (60-80% in 28 days)
- **Non-biodegradation**: Photodegradation half-life ~10-20 days in air

12.3 Bioaccumulative potential

- **Log P**: ~3.0 → Low bioaccumulation potential

12.4 Mobility in soil

- Moderate mobility in soil.

12.5 Results of PBT and vPvB assessment

- Not PBT/vPvB substance.

12.6 Other adverse effects

- Harmful to aquatic life with long lasting effects

13. Disposal Considerations

- Dispose of in accordance with local, national, international regulations.

- **Recommended method**: Incineration at approved facility.
- **Contaminated packaging**: Dispose as hazardous waste or recycle after thorough cleaning

14. Transport Information

- **UN Number**: Not applicable
- **Proper Shipping Name**: Not applicable
- **Transport Hazard Class**: Not applicable
- **Packaging Group**: Not applicable
- **Environmental Hazard**: Marine pollutant (avoid water contamination)
- **Special Precautions**: Keep containers closed, protect from heat, avoid leakage.

15. Regulatory Information

- **Inventory Status**:
  - TSCA (USA): Listed
  - EINECS (EU): 203-234-3
  - IECSC (China): Listed
- **Safety Regulations**:
  - OSHA Hazard Communication Standard
  - EU REACH Regulation
  - GHS (Globally Harmonized System)