SAFETY DATA SHEET

1. Identification

Product identifier: Amyl Alcohol (Mixed Isomers)

Other means of identification
Product No.: 9032, 2996

Recommended use and restriction on use
Recommended use: Not available.
Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer
Company Name: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway, Suite 200
         Center Valley, PA 18034
Telephone: Customer Service: 855-282-6867
Fax: Contact Person: Environmental Health & Safety
e-mail: info@avantormaterials.com

Emergency telephone number:
24 Hour Emergency: 908-859-2151
Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard classification

Physical hazards
Flammable liquids Category 3

Health hazards
Acute toxicity (Oral) Category 4
Acute toxicity (Inhalation - vapor) Category 4
Skin corrosion/irritation Category 2
Specific target organ toxicity - single exposure Category 3
Acute toxicity (Dermal) Category 4

Label elements
Hazard symbol:

Signal word: Warning
Hazard statement:  Flammable liquid and vapor.  
Harmful if inhaled.  
Harmful if swallowed.  
Harmful in contact with skin.  
Causes skin irritation.  

Precautionary statement  
Prevention:  Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
Ground/bond container and receiving equipment. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product.  

Response:  IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.  


Disposal:  Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.  

Other hazards which do not result in GHS classification:  Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.  

3. Composition/information on ingredients  
Mixtures  
<table>
<thead>
<tr>
<th>Chemical identity</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>Content in percent (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMYL ALCOHOL</td>
<td>71-41-0</td>
<td>55 - 65%</td>
<td></td>
</tr>
<tr>
<td>2-METHYLBUTANOL</td>
<td>137-32-6</td>
<td>30 - 40%</td>
<td></td>
</tr>
<tr>
<td>ISOAMYL ALCOHOL</td>
<td>123-51-3</td>
<td>4 - 14%</td>
<td></td>
</tr>
</tbody>
</table>

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.  

4. First-aid measures  
General information:  Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.  
Ingestion:  Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.  
Inhalation:  Move to fresh air. Get medical attention if symptoms persist.  
Skin contact:  Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.
Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General fire hazards: Flammable liquid and vapor. In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical:

Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Heat may cause the containers to explode.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the MSDS for Personal Protective Equipment.

Methods and material for containment and cleaning up: Eliminate all ignition sources if safe to do so. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use only non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures: Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental precautions: Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.
7. Handling and storage

Precautions for safe handling: DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection. Use only with adequate ventilation. Wash hands thoroughly after handling. Avoid contact with eyes. Avoid contact with skin.

Conditions for safe storage, including any incompatibilities: Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

<table>
<thead>
<tr>
<th>Chemical identity</th>
<th>Type</th>
<th>Exposure Limit values</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISOAMYL ALCOHOL</td>
<td>TWA</td>
<td>100 ppm</td>
<td>US. ACGIH Threshold Limit Values (2011)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>125 ppm</td>
<td>US. ACGIH Threshold Limit Values (2011)</td>
</tr>
<tr>
<td></td>
<td>STEL</td>
<td>125 ppm 450 mg/m3</td>
<td>US. NIOSH: Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td></td>
<td>REL</td>
<td>100 ppm 360 mg/m3</td>
<td>US. NIOSH: Pocket Guide to Chemical Hazards (2010)</td>
</tr>
<tr>
<td></td>
<td>PEL</td>
<td>100 ppm 360 mg/m3</td>
<td>US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>100 ppm 360 mg/m3</td>
<td>US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)</td>
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</table>

Appropriate engineering controls

No data available.

Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

Eye/face protection: Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection: Chemical resistant gloves

Other: Wear suitable protective clothing.

Respiratory protection: In case of inadequate ventilation use suitable respirator.

Hygiene measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.
9. Physical and chemical properties

Appearance

Physical state: Liquid
Form: Liquid
Color: Colorless
Odor: Characteristic
Odor threshold: No data available.

pH: No data available.
Melting point/freezing point: No data available.
Initial boiling point and boiling range: 133 °C
Flash Point: 33 °C
Evaporation rate: 0.26 (butyl acetate=1)
Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): 10.0 %(V)
Flammability limit - lower (%): 1.2 %(V)
Explosive limit - upper (%): No data available.
Explosive limit - lower (%): No data available.

Vapor pressure: 2.6 kPa (20 °C)
Vapor density: 3 AIR=1
Relative density: 0.81 (20 °C)

Solubility(ies)

Solubility in water: 30 g/l
Solubility (other): No data available.

Partition coefficient (n-octanol/water): No data available.
Auto-ignition temperature: 300 °C
Decomposition temperature: No data available.
Viscosity: No data available.

Other information
Molecular weight: 88.15 g/mol

10. Stability and reactivity

Reactivity: No dangerous reaction known under conditions of normal use.
Chemical stability: Material is stable under normal conditions.
Possibility of hazardous reactions:
Hazardous polymerization does not occur.

Conditions to avoid:
Heat, sparks, flames. Contact with incompatible materials.

Incompatible materials:

Hazardous decomposition products:
Aldehydes. Oxides of Carbon.

11. Toxicological information

Information on likely routes of exposure

Ingestion: Harmful if swallowed.

Inhalation: Harmful if inhaled.
Skin contact: Causes skin irritation. Harmful in contact with skin.

Eye contact: May irritate eyes.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral
Product: ATEmix (): 1,955.35 mg/kg

Dermal
Product: ATEmix (): 1,937.26 mg/kg

Inhalation
Product: No data available.

Repeated dose toxicity
Product: No data available.

Skin corrosion/irritation
Product: Causes skin irritation.

Serious eye damage/eye irritation
Product: May irritate eyes.

Respiratory or skin sensitization
Product: Not a skin sensitizer.

Carcinogenicity
Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

No carcinogenic components identified

Germ cell mutagenicity

In vitro
Product: No mutagenic components identified

In vivo
Product: No mutagenic components identified

Reproductive toxicity
Product: No components toxic to reproduction

Specific target organ toxicity - single exposure
Product: May cause respiratory irritation. May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure
Product: No data available.

Aspiration hazard
Product: Not classified

Other effects: None known.
12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

**Fish**

Product: No data available.

**Specified substance(s):**

**AMYL ALCOHOL**

LC 50 (Fathead minnow (Pimephales promelas), 96 h): 437 - 511 mg/l Mortality
LC 50 (Bluegill (Lepomis macrochirus), 96 h): 650 mg/l Mortality
LC 50 (Carp (Leuciscus idus melanotus), 48 h): 479 mg/l Mortality

**Aquatic invertebrates**

Product: No data available.

**Specified substance(s):**

**AMYL ALCOHOL**

LC 50 (Water flea (Daphnia magna), 24 h): 580 mg/l Mortality

Chronic hazards to the aquatic environment:

**Fish**

Product: No data available.

**Aquatic invertebrates**

Product: No data available.

**Toxicity to Aquatic Plants**

Product: No data available.

Persistence and degradability

**Biodegradation**

Product: There are no data on the degradability of this product.

**BOD/COD ratio**

Product: No data available.

Bioaccumulative potential

**Bioconcentration factor (BCF)**

Product: No data available on bioaccumulation.

**Partition coefficient n-octanol / water (log Kow)**

Product: Log Kow: No data available.

Mobility in soil:

No data available.

Other adverse effects:

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

**Disposal instructions:**

Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Contaminated packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

### 14. Transport information

**DOT**
- UN number: UN 1105
- UN proper shipping name: Pentanols
- Transport hazard class(es): Class(es): 3, Label(s): 3
- Packing group: III
- Marine Pollutant: No

**IMDG**
- UN number: UN 1105
- UN proper shipping name: PENTANOLS
- Transport hazard class(es): Class(es): 3, Label(s): 3
- EmS No.: F-E, S-D
- Packing group: III
- Marine Pollutant: No

**IATA**
- UN number: UN 1105
- Proper Shipping Name: Pentanols
- Transport hazard class(es): Class(es): 3, Label(s): 3
- Marine Pollutant: No
- Packing group: III

### 15. Regulatory information

**US federal regulations**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
- US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
  - None present or none present in regulated quantities.

**CERCLA Hazardous Substance List (40 CFR 302.4):**
- AMYL ALCOHOL Reportable quantity: 100 lbs.

**Superfund amendments and reauthorization act of 1986 (SARA)**

**Hazard categories**
- [x] Acute (Immediate)
- [x] Chronic (Delayed)
- [x] Fire
- [ ] Reactive
- [ ] Pressure Generating

**SARA 302 Extremely hazardous substance**
- None present or none present in regulated quantities.

**SARA 304 Emergency release notification**

<table>
<thead>
<tr>
<th>Chemical Identity</th>
<th>RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMYL ALCOHOL</td>
<td>100 lbs.</td>
</tr>
</tbody>
</table>
SARA 311/312 Hazardous chemical
Chemical identity | Threshold Planning Quantity
--- | ---
AMYL ALCOHOL | 500 lbs
2-METHYLBUTANOL | 500 lbs
ISOAMYL ALCOHOL | 500 lbs

SARA 313 (TRI reporting)
None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)
None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):
None present or none present in regulated quantities.

US state regulations

US. California Proposition 65
No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act
AMYL ALCOHOL Listed
ISOAMYL ALCOHOL Listed

US. Massachusetts RTK - Substance List
AMYL ALCOHOL Listed
2-METHYLBUTANOL Listed
ISOAMYL ALCOHOL Listed

US. Pennsylvania RTK - Hazardous Substances
AMYL ALCOHOL Listed
2-METHYLBUTANOL Listed
ISOAMYL ALCOHOL Listed

US. Rhode Island RTK
AMYL ALCOHOL Listed
ISOAMYL ALCOHOL Listed

Inventory Status:
- Australia AICS: On or in compliance with the inventory
- Canada DSL Inventory List: On or in compliance with the inventory
- EINECS, ELINCS or NLP: On or in compliance with the inventory
- Japan (ENCS) List: On or in compliance with the inventory
- China Inv. Existing Chemical Substances: Not in compliance with the inventory.
- Korea Existing Chemicals Inv. (KECI): On or in compliance with the inventory
- Canada NDSL Inventory: Not in compliance with the inventory.
- Philippines PICCS: On or in compliance with the inventory
- US TSCA Inventory: On or in compliance with the inventory
- New Zealand Inventory of Chemicals: On or in compliance with the inventory
- Japan ISHL Listing: On or in compliance with the inventory
- Japan Pharmacopoeia Listing: Not in compliance with the inventory.

16. Other information, including date of preparation or last revision

NFPA Hazard ID

| Flammability | 3 |
| 2 | 0 |
Health
Reactivity
Special hazard.

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue date: 09-12-2014
Revision date: No data available.
Version #: 1.0
Further information: No data available.

Disclaimer:

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