

SAFETY DATA SHEET

Preparation Date: 09/16/2016

Revision Date: 6/1/2017

Revision Number: G1

1. IDENTIFICATION

Product identifier

Product code: A1285
Product Name: 1-PENTANOL, REAGENT, ACS

Other means of identification

Synonyms: n-Amyl alcohol; n-Butylcarbinol; n-Pentyl alcohol
CAS #: 71-41-0
RTECS # SB9800000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Solvent. In organic synthesis. For manufacturing or laboratory use only.
Uses advised against Not for food or drug use.

Supplier: Spectrum Chemical Mfg. Corp
 14422 South San Pedro St.
 Gardena, CA 90248
 (310) 516-8000.

Order Online At: <https://www.spectrumchemical.com>

Emergency telephone number Chemtrec 1-800-424-9300

Contact Person: Martin LaBenz (West Coast)

Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Acute toxicity - Inhalation (Gases)	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Flammable liquids	Category 3

Label elements

Warning

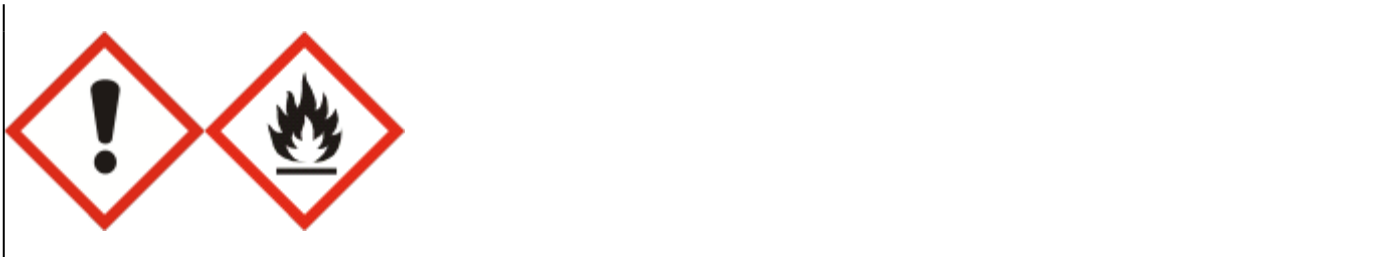
Hazard statements

Harmful if inhaled
 Causes skin irritation
 Causes serious eye irritation
 May cause respiratory irritation
 Flammable liquid and vapor

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Hazards not otherwise classified (HNOC)

May be harmful if swallowed
May be harmful if in contact with skin

Other hazards

May be harmful if swallowed
May be harmful in contact with skin

Precautionary Statements - Prevention

Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves
Wear eye/face protection
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/.../equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

Precautionary Statements - Response

In case of fire: Use CO₂, dry chemical, or foam to extinguish.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
1-Pentanol	71-41-0	100

4. FIRST AID MEASURES

First aid measures

General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call

1-800-222-1222.

- Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.
- Eye Contact:** Flush eyes with water for 15 minutes. Get medical attention.
- Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
- Ingestion:** If swallowed, seek medical advice immediately and show this container or label.

Most important symptoms and effects, both acute and delayed

- Symptoms** Causes skin irritation. Causes serious eye irritation. Irritating to respiratory system. Central nervous system effects. May cause nausea, headache, vomiting. May cause drowsiness or dizziness. Inhalation of high concentrations may cause anesthetic effects. Fainting. Delirium. Diplopia. Lacrimation. Dyspnea (Shortness of breath and difficulty breathing). Coughing and wheezing. May affect the liver. It may affect the kidneys.

Indication of any immediate medical attention and special treatment needed

- Notes to Physician:** Treat symptomatically.

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:

Use water spray, mist, alcohol-resistant foam, Dry chemical or Carbon dioxide (CO₂).

Unsuitable Extinguishing Media:

Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products:

Carbon Dioxide, Carbon Monoxide.

Specific hazards:

Flammable. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks).

Special Protective Actions for Firefighters

Specific Methods:

For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. Dike fire-control water for later disposal; do not scatter the material.

Special Protective Equipment for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Remove all sources of ignition. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Absorb spill with inert material (e.g. vermiculite, dry sand or earth). In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. All equipment used when handling the product must be grounded. Remove all sources of ignition. Keep away from incompatible materials.

Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Do not ingest. Keep away from sources of ignition - no smoking. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep container tightly closed in a dry and well-ventilated place. Store away from incompatible materials. Store at room temperature in the original container. Store in a segregated and approved area. Keep away from heat and sources of ignition.

Incompatible Materials:

Oxidizing agents
Alkali Metals
Acids
Halides
Aldehydes

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WHEEL
1-Pentanol	71-41-0	None	None	None	100 ppm TWA

Canada

Product code: A1285

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Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
1-Pentanol	71-41-0	None	None	None	None

Australia and Mexico

Components	CAS-No.	Australia	Mexico
1-Pentanol	71-41-0	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation, especially in confined areas. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles

Skin and body protection: Gloves
Long sleeved clothing
Chemical resistant apron

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:

Liquid

Appearance:

Clear.

Color:

Colorless.

Odor:

Stench.

Taste

No information available.

Formula:

C₅H₁₂O

Molecular/Formula weight:

88.15

Flammability:

Flammable

Flashpoint (°C/°F):

49°C (120°F)

Flash Point Tested according to:

Closed cup

Autoignition Temperature (°C/°F):

300°C (572°F)

Lower Explosion Limit (%):

1.2

Upper Explosion Limit (%):

10.5

Melting point/range(°C/°F):

-78°C (-108.4°F)

Decomposition temperature(°C/°F):

No information available

Boiling point/range(°C/°F):

138° - 139°C (280° - 282°F)

Bulk density:

No information available

Density (g/cm³):

0.82

Specific gravity:

No information available

pH:

No information available

Vapor pressure @ 20°C (kPa):

0.2 kPa (1.5 mmHg)

Evaporation rate:

No information available

Vapor density:

3.0 (Air = 1.0)

VOC content (g/L):

No information available

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Odor threshold (ppm):
No information available

**Partition coefficient
(n-octanol/water):**
log Pow: 1.51

Viscosity:
No information available

Miscibility:
Miscible with Ether
Miscible with alcohol
Miscible with many organic solvents

Solubility:
Slightly soluble in water

10. STABILITY AND REACTIVITY

Reactivity

Reactive with oxidizing agents
Reactive with acids
Reacts with alkali metals

Chemical stability

Stability: Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Incompatible materials.

Incompatible Materials: Oxidizing agents
Alkali Metals
Acids
Halides
Aldehydes

Hazardous decomposition products: Carbon oxides.

Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Skin. Eyes. Ingestion. Inhalation.

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document
Component Information

1-Pentanol	
CAS-No.	71-41-0

LD50/oral/rat = 5660 µL/kg Oral LD50 Rat
LD50/oral/mouse = No information available
LD50/dermal/rabbit = 2306 mg/kg
2000 mg/kg
LD50/dermal/rat = No information available

LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 5660 µL/kg

LD50/oral/mouse =
Value - Acute Tox Oral = No information available

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = 2000 mg/kg

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes skin irritation. Moderately to strongly irritating. May be harmful in contact with skin.

Eye Contact: Causes serious eye irritation. Causes moderate to severe eye irritation.

Inhalation Harmful by inhalation. Irritating to respiratory system. Amyl alcohol vapor can cause stinging sensation of the eyes, and hyperemia of the conjunctiva, but no significant corneal injury. Can cause lacrimation, nasal discomfort and discharge. Symptoms may include chest tightness, coughing. Symptoms may include coughing and wheezing, and shortness of breath. Exposure to high concentrations may cause headache, nausea, vomiting. Inhalation of vapors may cause drowsiness and dizziness. May cause lightheadedness. May cause fainting (passing out). May cause double vision, deafness, delirium, coma. May affect the kidneys. It may cause pulmonary edema.

Ingestion May be harmful if swallowed. May affect behavior/central nervous system (somnolence). May affect behavior/central nervous system (general anesthetic). May affect the kidneys.

Aspiration hazard No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated ingestion may affect the liver. Prolonged or repeated inhalation may affect the liver.

Sensitization: No information available.

Mutagenic Effects: Experiments with bacteria have shown mutagenic effects

Carcinogenic effects: Not considered carcinogenic.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
1-Pentanol	71-41-0	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

Reproductive toxicity No data is available

Reproductive Effects: No information available

Developmental Effects: No information available

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure Respiratory system.

STOT - repeated exposure No information available.

Target Organs: No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: Aquatic environment.

1-Pentanol - 71-41-0

Freshwater Algae Data: 1100 mg/L EC50 *Desmodesmus subspicatus* 24 h

Freshwater Fish Species Data: 437 - 511 mg/L LC50 *Pimephales promelas* 96 h flow-through 1 530 mg/L LC50 *Brachydanio rerio* 96 h static 1 650 mg/L LC50 *Lepomis macrochirus* 96 h static 1 370 - 490 mg/L LC50 *Oncorhynchus mykiss* 96 h static 1

Water Flea Data: 341 mg/L EC50 *Daphnia magna* 48 h

Persistence and degradability: No information available

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
1-Pentanol	71-41-0	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Subsidiary Class: No information available
Packing group: III
Emergency Response Guide Number: 129
Marine Pollutant: No data available
DOT RQ (lbs): No information available
Special Provisions: B1, B3, IB3, T2, TP1
Symbol(s): No information available
Description: UN1105, PENTANOLS, 3, III

TDG (Canada)

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Marine Pollutant: No Information available
Description: UN1105, PENTANOLS, 3, III

ADR

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Description: UN1105, PENTANOLS, 3, III

IMO / IMDG

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Marine Pollutant: No information available
EMS: F-E
Special Provisions: 223
Description: UN1105, PENTANOLS, 3, III

RID

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Description: UN1105, PENTANOLS, 3, III

ICAO

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Description: UN1105, PENTANOLS, 3, III
Special Provisions A3

IATA

UN-No: UN1105
Proper Shipping Name: Pentanols
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
ERG Code: 3L
Special Provisions No information available
Description: UN1105, PENTANOLS, 3, III

15. REGULATORY INFORMATION

International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
1-Pentanol	71-41-0	Present	Present KE-28005	Present	Present (2)-217	Present	Present	Present 200-752-1

U.S. Regulations*1-Pentanol*

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0124
Pennsylvania RTK: Present

FDA - 21 CFR - Total Food Additives 172.515, 176.180, 176.210

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
1-Pentanol	71-41-0	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
1-Pentanol	71-41-0	None	None	None	None	None

U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals	TSCA 8(d) -Health and Safety
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		With Significant New Use Rules (SNURS)	Reporting
1-Pentanol	71-41-0	Not Applicable	Not Applicable

Canada

WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information:

Component
1-Pentanol
71-41-0 (100)

WHMIS 2015 Hazard Classification
Flammable liquids - Category 3: H226 Flammable liquid and vapour.; Skin corrosion/irritation - Category 2: H315 Causes skin irritation.; Serious Eye Damage/Eye Irritation - Category 2: H319 Causes serious eye irritation.

Canada Hazardous Products Regulation This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

WHMIS 1988 Hazard Class

D2B Toxic materials
B3 Combustible liquid

Components

1-Pentanol

WHMIS 1988
B2,D2B

Canada Controlled Products Regulation:

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

Components	WHMIS Ingredient Disclosure List -
1-Pentanol	1 %

Inventory

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
1-Pentanol	71-41-0	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
1-Pentanol	71-41-0	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
1-Pentanol	71-41-0	Not listed

EU Classification

EU GHS - SV - CLP 172/2008

Components	CAS-No.	EU GHS - SV - CLP (172/2008)
1-Pentanol	71-41-0	Flammable liquids - Flam. Liq. 3: H226 Flammable liquid and vapour.; Acute toxicity - Inhalation - Acute Tox. 4: H332 Harmful if inhaled. (Minimum classification); Skin corrosion/irritation - Skin Irrit. 2: H315 Causes skin irritation.; Specific target organ toxicity - Single exposure - STOT SE 3: H335 May cause respiratory irritation.603-200-00-1

EU - CLP (1272/2008)

R-phrases(s)

Product code: A1285

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R10 - Flammable.
R20 - Harmful by inhalation.
R36/37/38 - Irritating to eyes, respiratory system and skin.

S -phrase(s)

S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 - Wear suitable gloves.
S46 - If swallowed, seek medical advice immediately and show this container or label.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
1-Pentanol	71-41-0	R10 Xn; R20 Xi; R37/38	No information	S1/2 S36/37 S46

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

Xi - Irritant.
Xn - Harmful.
Flammable

Xi



Xn



16. OTHER INFORMATION

Preparation Date: 09/16/2016
Revision Date: 6/1/2017
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet