

SAFETY DATA SHEET

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

1.1 Product identifiers

Product name: Ammonium hydroxide (28 - 30%)
CAS number: 1336-21-6
Synonyms: Ammonium hydroxide solutions, Ammonia aqueous, Ammonia solutions.

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

Identified Uses : Process chemical, Laboratory and scientific research and development.

1.3 Details of the supplier of the safety data sheet

Company : Lab Alley, LLC
22111 Highway 71 West, Suite 601
Spicewood, Texas 78669
U.S.A.
Telephone : 512-668-9918
Fax : 512-886-4008

1.4 Emergency telephone

Emergency Phone # : US & Canada: 1-800-535-5053 INFOTRAC
International 1-352-323-3500 INFOTRAC

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 4)
Skin corrosion (Category 1A)
Serious eye damage (Category 1)
Acute aquatic toxicity (Category 1)
Sensitization, respiratory (Category 1)
Specific target organ toxicity - single exposure (Category 3) Respiratory tract irritation

In case of skin contact: Immediately flush skin with plenty of water for 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Launder clothing before re use. (Discard contaminated shoes).

In case of ingestion: Do NOT induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious or convulsing person. Keep the victim calm and warm. Get immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Corrosive effects. May cause severe eye, skin, respiratory tract irritation and burns. May cause temporary blindness and severe eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause allergic respiratory reaction.

4.3 Indication of any immediate medical attention and special treatment needed

Immediate medical attention is required for all routes of exposure.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable (and unsuitable) extinguishing media

Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Specific hazards arising from the substance or mixture

Not considered to be a fire hazard. Irritating, corrosive and/or toxic gases or fumes will be released during a fire. Flammable vapors may accumulate in confined spaces

5.3 Special protective equipment and precautions for firefighters

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

5.4 Further information

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

Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Wear appropriate personal protective equipment as specified in Section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Contain and recover liquid when possible. Do not let product enter drains. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as Acetic, Hydrochloric or Sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal. 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.

6.4 Reference to other sections

No additional information available.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not breathe mist or vapor. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Prevent contact with eye, skin, and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Keep containers closed when not in use.

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

Store in a cool, dry, well ventilated location out of direct sunlight. Keep container tightly closed. Keep out of the reach of children. Recommended storage temperature: 2 - 8 °C .

SECTION 8. Exposure controls/personal protection

8.1 Occupational exposure limits

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Acetic anhydride	TWA: 1 ppm STEL: 3 ppm	(Vacated) Ceiling: 5 ppm (Vacated) Ceiling: 20 mg/ m ³ TWA: 5 ppm TWA: 20 mg/m ³	IDLH: 200 ppm Ceiling: 5 ppm Ceiling: 20 mg/m ³

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Acetic anhydride	TWA: 5 ppm TWA: 21 mg/m ³	TWA: 5 ppm TWA: 20 mg/m ³	TWA: 1 ppm STEL: 3 ppm

Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

8.2 Exposure controls

Appropriate engineering controls

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal protective equipment

Eye/face protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Control of environmental exposure

Should not be released into the environment. See Section 12 for additional ecological information.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical State	Liquid.
Appearance	Colorless.
Odor	Pungent.
Odor Thresh	No information available.
pH	3
Melting Point/Range	-73.1 °C / -99.6 °F
Boiling Point/Range	140 °C / 284 °F @ 760 mmHg
Flash Point	49 °C / 120.2 °F - closed cup
Evaporation Rate	0.46
Flammability (solid, gas)	Not applicable.
Flammability or explosive limit	Upper : 10.3 v/v Lower : 2.9% v/v
Vapor Pressure	5 mbar @ 20 °
Vapor Density	3.5
Density	1.087
Solubility	No information
Partition coefficient; n-octanol/water	No data available.
Autoignition Temp	316 °C / 600.8 °F
Decomposition Temp	No information available.
Viscosity	0.91 mPa.s at 20 °C
Molecular Formula	C4H6O3
Molecular Weight	102.09
VOC Content(%)	No information available.
Oxidizing properties	None.

9.2 Other safety information

None.

SECTION 10: Stability and reactivity

10.1 Reactivity

Yes.

10.2 Chemical stability

Stable under recommended storage conditions. Moisture sensitive. Reacts violently with water.

10.3 Possibility of hazardous reactions

None under normal processing.

10.4 Conditions to avoid

Incompatible products. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water.

10.5 Incompatible materials

Oxidizing agents, Strong acids, Strong bases, Water, Strong reducing agents.

10.6 Hazardous decomposition products

Carbon monoxide (CO), Carbon dioxide (CO2)

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetic anhydride	630 mg/kg (Rat)	4000 mg/kg (Rabbit)	LC100: 1.67 mg/L/6h (Rat) LC50: 400 ppm/6h (Rat)

Skin corrosion/irritation

Causes severe skin burns.

Serious eye damage/eye irritation

Causes serious eye burns.

Respiratory or skin sensitization

No information available.

Germ cell mutagenicity

Not mutagenic in AMES test.

Carcinogenicity *The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Acetic anhydride	108-24-7	Not listed	Not listed	Not listed	Not listed	Not listed

Reproductive toxicity

No information available.

Specific target organ toxicity - single exposure

Respiratory system

Specific target organ toxicity - repeated exposure

None known.

Aspiration hazard

No information available.

Chronic effects

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

11.2 Additional information

None.

SECTION 12. Ecological information

12.1 Toxicity

Ecotoxicity:

Reacts with water so no ecotoxicity data for the substance is available. Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Acetic anhydride	Not listed	265 mg/L LC50 48 h	Not listed	55 mg/L EC50 = 24 h

12.2 Persistence and Degradability

Persistence is unlikely based on information available.

12.3 Bioaccumulative Potential

No data available.

12.4 Mobility in Soil

log Pow = -0.27

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

See actual entry in RTECS for complete information.

SECTION 13. Disposal considerations

13.1 Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

SECTION 14: Transport information

DOT

UN-No UN1715
 Proper Shipping Name ACETIC ANHYDRIDE
 Hazard Class 8
 Subsidiary Hazard Class 3
 Packing Group II

IATA

UN-No UN1715
 Proper Shipping Name ACETIC ANHYDRIDE
 Hazard Class 8
 Subsidiary Hazard Class 3
 Packing Group II

IMDG/IMO

UN-No UN1715
 Proper Shipping Name ACETIC ANHYDRIDE
 Hazard Class 8
 Subsidiary Hazard Class 3
 Packing Group II

TDG

UN-No UN1715
 Proper Shipping Name ACETIC ANHYDRIDE
 Hazard Class 8
 Subsidiary Hazard Class 3
 Packing Group II

SECTION 15: Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Acetic anhydride	X	X	-	203-564-8	-		X	X	X	X	X

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazardous Categorization

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

Clean Water Act

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Acetic anhydride	X	5000 lb	-	-

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Acetic anhydride	5000 lb	-

California Proposition 65 This product does not contain any Proposition 65 chemicals

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Acetic anhydride	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade

No information available

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

WHMIS Hazard Class

B3 Combustible liquid
D1A Very toxic materials
E Corrosive material



SECTION 16: Other information

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Disclaimer:

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.