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

Catalogue Number	CS-T-00281
Product Name	Acetic Anhydride
CAS No.	108-24-7
Category	Fine Chemicals
Synonyms	Acetanhydride
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email **sales@clearsynth.com** for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Acute toxicity (Category 4)

2.2 Label Elements

Signal Word: Warning

Hazard Statement(s)

Code	Statement
H226	Not available
H302	Harmful if swallowed.
H314	Not available
H332	Harmful if inhaled.

H318	Causes serious eye damage.
H330	Not available
H331	Not available
H335	Not available
H290	Not available
H370	Not available
H372	Not available
H402	Not available
H313	Not available
H336	Not available

Precautionary Statement(s)

Code	Statement
P210	Not available
P233	Not available
P240	Not available
P241	Not available
P242	Not available
P243	Not available
P260	Not available
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash hands thoroughly after handling.
P270	Not available
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P317	Not available
P301+P330+P331	Not available
P302+P361+P354	Not available
P303+P361+P353	Not available
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P354+P338	Not available
P316	Not available
P317	Not available
P321	Specific treatment (see … on this label).
P330	Not available
P363	Not available
P370+P378	Not available
P403+P235	Not available
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulatio
P264+P265	Not available
P284	Not available
P319	Get medical help if you feel unwell.
P320	Not available
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P234	Not available
P308+P316	Not available
P390	Not available
P406	Not available
P273	Not available
P302+P317	Not available

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : Acetic Anhydride
CAS Number : 108-24-7
Molecular Formula : C4H6O3
Molecular Weight : 102.09
Parent Chemical : .
Synonyms : Acetanhydride
Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures
General advice: Remove contaminated clothing and shoes. Seek medical attention if symptoms persist or are severe.
Inhalation: Move person to fresh air. Keep at rest. If breathing is difficult, seek medical attention.
Skin contact: Immediately wash with plenty of water for at least 15 minutes. Seek medical attention for irritation, burns, or persistent symptoms.
Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek immediate medical attention.
Ingestion: Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed
Corrosive; causes severe skin burns and eye damage. May cause respiratory tract irritation and chemical burns. Symptoms may include pain, redness, blistering, tearing, coughing, and difficulty breathing. Delayed effects: Not available.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically. No data available on specific antidote.

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Extinguishing media
Suitable extinguishing media: Dry chemical, carbon dioxide (CO2), alcohol-resistant foam.
Unsuitable extinguishing media: Water jet. (Use water spray/fog only for cooling containers and controlling vapors where appropriate.)

5.2 Special hazards arising from the substance or mixture
Combustible liquid. Reacts with water/moisture to form acetic acid; reaction may be vigorous and releases heat. Vapors may form explosive mixtures with air under certain conditions. Thermal decomposition may produce irritating and/or toxic fumes.

5.3 Advice for firefighters
Wear self-contained breathing apparatus (SCBA) and full protective gear. Cool containers exposed to fire with water spray from a safe distance. Prevent fire-fighting water from entering drains or waterways.

Hazardous combustion products: Not available.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Evacuate unnecessary personnel. Ensure adequate ventilation. Avoid breathing vapors/mists. Avoid contact with skin and eyes. Wear appropriate PPE (see Section 8).

6.2 Environmental precautions
Prevent entry into drains, sewers, and waterways. Notify authorities if release enters the environment.

6.3 Methods and material for containment and cleaning up
Contain spill. Absorb with inert, dry absorbent (e.g., dry sand, vermiculite). Do not add water directly to spilled material. Collect into suitable, tightly closed containers for disposal. Ventilate area and wash spill site after material pickup, avoiding water contact with residual concentrated material.

6.4 Reference to other sections
See Section 8 for personal protective equipment and Section 13 for disposal considerations.

SECTION-7: Handling and storage

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Handle in a chemical fume hood or with local exhaust ventilation. Avoid breathing vapors/mists. Avoid contact with skin, eyes, and clothing. Keep away from moisture and water. Use corrosion-resistant equipment where appropriate. Do not eat, drink, or smoke when using this product. Wash thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities
Store tightly closed in a cool, dry, well-ventilated place. Protect from moisture. Keep container closed when not in use. Store away from incompatible materials.
Incompatible materials: Water, alcohols, amines, strong bases, strong oxidizing agents, strong reducing agents, and other nucleophiles. (May react vigorously.)

7.3 Specific end use(s)
Fine chemical / laboratory use. No data available for additional specific uses.

SECTION 8: Exposure controls / personal protection

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Occupational exposure limits: Not available.
Biological limit values: Not available.

8.2 Exposure controls
Engineering controls: Use local exhaust ventilation or fume hood. Provide eyewash station and safety shower.
Personal protective equipment (PPE):
- Eye/face protection: Chemical safety goggles and face shield.
- Skin protection: Chemical-resistant gloves (material selection dependent on use conditions; consult glove supplier). Wear protective clothing (lab coat/chemical-resistant apron as needed).
- Respiratory protection: If ventilation is inadequate, use appropriate NIOSH/EN-approved respirator for acid gases/organic vapors as applicable. Selection must be based on exposure assessment.
Hygiene measures: Remove contaminated clothing and wash before reuse. Wash hands after handling.
Environmental exposure controls: Avoid release to the environment; use secondary containment where appropriate.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available
d) pH	No data available
e) Vapour Pressure	No data available
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

SECTION 10: Stability and reactivity

10.1 Reactivity

Reacts with water/moisture; hydrolyzes to acetic acid with heat evolution.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Violent reaction possible with water and incompatible materials.

10.4 Conditions to avoid
Moisture, water, heat, ignition sources, and contact with incompatible materials.

10.5 Incompatible materials
Water, alcohols, amines, strong bases, strong oxidizing agents, strong reducing agents.

10.6 Hazardous decomposition products
Acetic acid vapors; other irritating fumes. No data available for additional decomposition products.

SECTION 11: Toxicological information

11.1 Information on toxicological effects
- Acute toxicity: IDENTIFICATION AND USE: Acetic anhydride ia a colorless liquid with a strong acetic odor. It is used in manufacture of acetyl compounds, cellulose acetates. The other applications include uses as acetylizer and solvent in examining wool fat, glycerol, fatty and volatile oils, resins; detection of rosin. It is widely used in organic synthesis, as dehydrating agent in nitrations, sulfonations and other reactions where removal of water is necessary. To reduce heroin availability, the United Nations has encouraged nations to control acetic anhydride, an essential ("precursor") chemical typically necessary to the drug's production. HUMAN STUDIES: Known to be a severe eye and skin irritant. Severe burns and vesiculation of human skin have been reported from liquid splashes, and concentrated vapor produces primary irritation. The immediate effect of exposure at vapor concentrations above 5 ppm is acute irritation of the eye. Inhalation can cause nasopharyngeal and upper respiratory tract irritation, with burning sensations, cough and dyspnea. Prolonged exposure may lead to pulmonary edema and death. ANIMAL STUDIES: Inhalation of 2000 ppm by rats for 4 hours caused deaths. It caused severe eye burns in rabbits. Rats were exposed to inhalation of vapors containing 0, 1, 5, or 20 ppm acetic anhydride for 6 hr/day, 5 days per week for 13 weeks. Clinical observations of eye and respiratory tract irritation and reduced body weights were observed primarily at 20 ppm. Inhalation exposure of pregnant female rats to 0, 25, 100, or 400 ppm 6 hr/day during days 6-15 of gestation caused fetotoxicity in a screening study with female rats exposed to the highly irritating, maternally toxic dose of 100 ppm vapor during gestation. In maternal animals at 100 ppm, severe respiratory tract irritation and body weight reduction were observed, and at 25 ppm substantial irritation of the respiratory tract was observed. No developmental effects were seen at 25 ppm even though substantial irritation of the respiratory tract was observed in maternal animals. Acetic anhydride was negative for mutagenicity in five Salmonella typhimurium strains (TA1535, TA1537, TA97, TA98, and TA100) in the presence and absence of metabolic activation. ECOTOXICITY STUDIES: The results of various laboratory tests with aquatic organisms, in which the toxic threshold concentrations for acetic anhydride were found to be about half those for acetic acid, suggest an initial toxic effect, so long as not all of the substance has hydrolyzed to acetic acid (during the first few minutes). LC50 (rat) = 1,000 ppm/4H
- Skin corrosion/irritation: /SIGNS AND SYMPTOMS/ Acetic anhydride is a strong irritant and has corrosive properties on contact with eyes, usually with delayed action; contact is followed by lacrimation, photophobia, conjunctivitis and corneal edema. Inhalation can cause nasopharyngeal and upper respiratory tract irritation, with burning sensations, cough and dyspnea; prolonged exposure may lead to pulmonary edema.
- Serious eye damage/eye irritation: No data available.
- Respiratory or skin sensitization: ...Severe burns to eyes and skin may result. Dermal sensitization has been reported. Vapors highly irritating to eyes and respiratory tract. conjunctivitis, lacrimation (discharge of tears), corneal

edema, opacity, photophobia (abnormal visual intolerance to light); nasal, pharyngeal irritation; cough, dyspnea (breathing difficulty), bronchitis; skin burns, vesiculation, sensitization dermatitis
- Germ cell mutagenicity: IDENTIFICATION AND USE: Acetic anhydride ia a colorless liquid with a strong acetic odor. It is used in manufacture of acetyl compounds, cellulose acetates. The other applications include uses as acetylizer and solvent in examining wool fat, glycerol, fatty and volatile oils, resins; detection of rosin. It is widely used in organic synthesis, as dehydrating agent in nitrations, sulfonations and other reactions where removal of water is necessary. To reduce heroin availability, the United Nations has encouraged nations to control acetic anhydride, an essential ("precursor") chemical typically necessary to the drug's production. HUMAN STUDIES: Known to be a severe eye and skin irritant. Severe burns and vesiculation of human skin have been reported from liquid splashes, and concentrated vapor produces primary irritation. The immediate effect of exposure at vapor concentrations above 5 ppm is acute irritation of the eye. Inhalation can cause nasopharyngeal and upper respiratory tract irritation, with burning sensations, cough and dyspnea. Prolonged exposure may lead to pulmonary edema and death. ANIMAL STUDIES: Inhalation of 2000 ppm by rats for 4 hours caused deaths. It caused severe eye burns in rabbits. Rats were exposed to inhalation of vapors containing 0, 1, 5, or 20 ppm acetic anhydride for 6 hr/day, 5 days per week for 13 weeks. Clinical observations of eye and respiratory tract irritation and reduced body weights were observed primarily at 20 ppm. Inhalation exposure of pregnant female rats to 0, 25, 100, or 400 ppm 6 hr/day during days 6-15 of gestation caused fetotoxicity in a screening study with female rats exposed to the highly irritating, maternally toxic dose of 100 ppm vapor during gestation. In maternal animals at 100 ppm, severe respiratory tract irritation and body weight reduction were observed, and at 25 ppm substantial irritation of the respiratory tract was observed. No developmental effects were seen at 25 ppm even though substantial irritation of the respiratory tract was observed in maternal animals. Acetic anhydride was negative for mutagenicity in five Salmonella typhimurium strains (TA1535, TA1537, TA97, TA98, and TA100) in the presence and absence of metabolic activation. ECOTOXICITY STUDIES: The results of various laboratory tests with aquatic organisms, in which the toxic threshold concentrations for acetic anhydride were found to be about half those for acetic acid, suggest an initial toxic effect, so long as not all of the substance has hydrolyzed to acetic acid (during the first few minutes). /GENOTOXICITY/ Acetic anhydride was evaluated for mutagenicity in the Salmonella/ microsome preincubation assay using the standard protocol approved by the National Toxicology Program. Acetic anhydride was tested at doses of 0.0033, 0.01, 0.033, 0.10, 0.19, 0.33, 0.90, and 1.0 mg/plate in as many as 5 Salmonella typhimurium strains (TA1535, TA1537, TA97, TA98, and TA100) in the presence and absence of rat or hamster liver S9. Acetic anhydride was negative in these tests and the highest ineffective dose tested in any S. typhimurium strain was 1.0 mg/plate. This dose exhibited some clearing of the background bacterial lawn.
- Carcinogenicity: A4: Not classifiable as a human carcinogen.
- Reproductive toxicity: IDENTIFICATION AND USE: Acetic anhydride ia a colorless liquid with a strong acetic odor. It is used in manufacture of acetyl compounds, cellulose acetates. The other applications include uses as acetylizer and solvent in examining wool fat, glycerol, fatty and volatile oils, resins; detection of rosin. It is widely used in organic synthesis, as dehydrating agent in nitrations, sulfonations and other reactions where removal of water is necessary. To reduce heroin availability, the United Nations has encouraged nations to control acetic anhydride, an essential ("precursor") chemical typically necessary to the drug's production. HUMAN STUDIES: Known to be a severe eye and skin irritant. Severe burns and vesiculation of human skin have been reported from liquid splashes, and concentrated vapor produces primary irritation. The immediate effect of exposure at vapor concentrations above 5 ppm is acute irritation of the eye. Inhalation can cause nasopharyngeal and upper respiratory tract irritation, with burning sensations, cough and dyspnea. Prolonged exposure may lead to pulmonary edema and death. ANIMAL STUDIES: Inhalation of 2000 ppm by rats for 4 hours caused deaths. It caused severe eye burns in rabbits. Rats were exposed to inhalation of vapors containing 0, 1, 5, or 20 ppm acetic anhydride for 6 hr/day, 5 days per week for 13 weeks. Clinical observations of eye and respiratory tract irritation and reduced body weights were observed primarily at 20 ppm. Inhalation exposure of pregnant female rats to 0, 25, 100, or 400 ppm 6 hr/day during days 6-15

of gestation caused fetotoxicity in a screening study with female rats exposed to the highly irritating, maternally toxic dose of 100 ppm vapor during gestation. In maternal animals at 100 ppm, severe respiratory tract irritation and body weight reduction were observed, and at 25 ppm substantial irritation of the respiratory tract was observed. No developmental effects were seen at 25 ppm even though substantial irritation of the respiratory tract was observed in maternal animals. Acetic anhydride was negative for mutagenicity in five Salmonella typhimurium strains (TA1535, TA1537, TA97, TA98, and TA100) in the presence and absence of metabolic activation. ECOTOXICITY STUDIES: The results of various laboratory tests with aquatic organisms, in which the toxic threshold concentrations for acetic anhydride were found to be about half those for acetic acid, suggest an initial toxic effect, so long as not all of the substance has hydrolyzed to acetic acid (during the first few minutes). /LABORATORY ANIMALS: Developmental or Reproductive Toxicity/ Inhalation exposure of pregnant female rats to 0, 25, 100, or 400 ppm 6 hr/day during days 6-15 of gestation ... caused fetotoxicity in a screening study with female rats exposed to the highly irritating, maternally toxic dose of 100 ppm vapor during gestation. At 100 ppm, severe respiratory tract irritation and body weight reduction were observed in the maternal animals. No developmental effects were seen at 25 ppm even though substantial irritation of the respiratory tract was observed in maternal animals. The NOEL for developmental/reproductive effects was considered to be 25 ppm.
- STOT-single exposure: No data available.
- STOT-repeated exposure: Initial Medical Screening-Chronic Respiratory Disease: In persons with impaired pulmonary function, especially those with obstructive airway diseases, the breathing of acetic anhydride might cause exacerbation of symptoms due to its irritant properties. Skin disease: Acetic anhydride is a primary skin irritant. Persons with pre-existing skin disorders may be more susceptible to the effects of this agent. Eye disease: Acetic anhydride is a severe eye irritant and may cause tissue damage. Those with pre-existing eye problems may be at increased risk from exposure. /LABORATORY ANIMALS: Subchronic or Prechronic Exposure/ Rats were exposed to inhalation of vapors containing 0, 1, 5, or 20 ppm /acetic anhydride/ for 6 hr/day, 5 days per week for 13 weeks. Clinical observations of eye and respiratory tract irritation and reduced body weights were observed primarily at 20 ppm. Microscopic examination of tissue revealed signs of irritation of minimal severity in the respiratory tract (nasal passages; larynx) in most animals at the 5 ppm level. At 20 ppm, all animals showed minimal to moderate respiratory tract irritation (nasal passages; larynx; trachea; lungs). Systemic effects were not observed at 5 or 20 ppm. No effects were detected at 1 ppm. In animals exposed to the same level of acetic anhydride for 13 weeks and then allowed a 13 week period without exposure, significant recovery from irritation effects were reported.
- Aspiration hazard: No data available.

Likely routes of exposure
- Acetic anhydride is a strong irritant ...on contact with eyes, usually with delayed action; contact is followed by lacrimation, photophobia, conjunctivitis and corneal edema. Inhalation can cause nasopharyngeal and upper respiratory tract irritation, with burning sensations, cough and dyspnea; prolonged exposure may lead to pulmonary edema.

Symptoms related to the physical, chemical and toxicological characteristics
- Initial Medical Screening-Chronic Respiratory Disease: In persons with impaired pulmonary function, especially those with obstructive airway diseases, the breathing of acetic anhydride might cause exacerbation of symptoms due to its irritant properties. Skin disease: Acetic anhydride is a primary skin irritant. Persons with pre-existing skin disorders may be more susceptible to the effects of this agent. Eye disease: Acetic anhydride is a severe eye irritant and may cause tissue damage. Those with pre-existing eye problems may be at increased risk from exposure.

SECTION 12: Ecological information

SECTION 12: Ecological information

12.1 Toxicity
No data available.

12.2 Persistence and degradability
No data available.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available.

12.5 Results of PBT and vPvB assessment
No data available.

12.6 Endocrine disrupting properties
No data available.

12.7 Other adverse effects
No data available.

SECTION 13: Disposal considerations

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Dispose of contents/container in accordance with local/regional/national/international regulations. Do not discharge to drains.
Recommended disposal: Treat as hazardous waste. Incineration by a licensed contractor may be appropriate.
Contaminated packaging: Dispose of as hazardous waste; containers may retain residues and vapors. Do not reuse empty containers.

SECTION 14: Transport information

SECTION 14: Transport information

14.1 UN number
Not available.

14.2 UN proper shipping name
Not available.

14.3 Transport hazard class(es)
Not available.

14.4 Packing group
Not available.

14.5 Environmental hazards
Not available.

14.6 Special precautions for user
Keep away from moisture. Ensure containers are tightly closed and protected from damage.

14.7 Maritime transport in bulk according to IMO instruments
Not available.

SECTION 15: Regulatory information

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Not available.

15.2 Chemical safety assessment
No data available.

SECTION 16: Other information

SECTION 16: Other information

Product: Acetic Anhydride
CAS No.: 108-24-7
Synonyms: Acetanhydride
Supplier: Clearsynth Labs Ltd., Mumbai, India
Emergency phone: +91-22-245045900

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Revision date: Not available.

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