



SAFETY DATA SHEET

according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 01/27/2015

Version 2.2

SECTION 1. Identification

Product identifier

| | |
|----------------|--|
| Product number | 100042 |
| Product name | Acetic anhydride for analysis EMSURE® ACS,ISO,Reag. Ph Eur |
| CAS-No. | 108-24-7 |

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

| | |
|-----------------|---|
| Identified uses | Reagent for analysis, Chemical production |
|-----------------|---|

Details of the supplier of the safety data sheet

| | |
|---------|--|
| Company | EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America General Inquiries: +1-978-715-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) |
|---------|--|

| | |
|---------------------|--|
| Emergency telephone | 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week |
|---------------------|--|

SECTION 2. Hazards identification

GHS Classification

Flammable liquid, Category 3, H226
Acute toxicity, Category 4, Oral, H302
Acute toxicity, Category 4, Inhalation, H332
Skin corrosion, Category 1B, H314
Serious eye damage, Category 1, H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H226 Flammable liquid and vapor.
H302 + H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.

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Precautionary Statements

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER or doctor/ physician.
P321 Specific treatment (see supplemental first aid instructions on this label).
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

| | | |
|------------|-------------------------------------|---|
| Formula | (CH ₃ CO) ₂ O | C ₄ H ₆ O ₃ (Hill) |
| Molar mass | 102.08 g/mol | |

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

Acetic anhydride (>= 90 % - <= 100 %)

108-24-7

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration.

Oxygen if necessary. Immediately call in physician.

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Skin contact

After skin contact: wash off with plenty of water. Remove contaminated clothing. Call a physician immediately.

Eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.

Ingestion

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation!). Call a physician immediately. Do not attempt to neutralize.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Irritation and corrosion, respiratory arrest, Bloody vomiting, Stomach/intestinal disorders, cardiovascular disorders, Lachrymation, shock, Coma
Risk of blindness!

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

Water, Foam

Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

Acetic acid vapors

May not get in touch with:

Water

Caution! in contact with water product releases:

Organic acids

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. 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

Personal precautions, protective equipment and emergency procedures

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Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent and neutralizing material (e.g. Chemizorb® H⁺, Art. No. 101595).

Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

Avoid generation of vapors/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Store at +15°C to +25°C (+59°F to +77°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

| Basis | Value | Threshold limits | Remarks |
|----------------------------------|---|----------------------|---------|
| <i>Acetic anhydride 108-24-7</i> | | | |
| ACGIH | Time Weighted Average (TWA): | 1 ppm | |
| | Short Term Exposure Limit (STEL): | 3 ppm | |
| NIOSH/GUIDE | Ceiling Limit Value and Time Period (if specified): | 5 ppm | |
| | | 20 mg/m ³ | |
| OSHA_TRANS | PEL: | 5 ppm | |
| | | 20 mg/m ³ | |
| Z1A | Ceiling Limit Value: | 5 ppm | |
| | | 20 mg/m ³ | |

Engineering measures

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Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

Eye/face protection

Tightly fitting safety goggles

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

Flame retardant antistatic protective clothing., Acid-resistant protective clothing.

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

| | |
|-----------------------------|--|
| Physical state | liquid |
| Color | colorless |
| Odor | stinging |
| Odor Threshold | No information available. |
| pH | ca. 3 at 10 g/l 68 °F (20 °C) |
| Melting point | -73 °C |
| Boiling point/boiling range | 280 - 284.9 °F (138 - 140.5 °C) at 1,013 hPa Method: DIN 53171 |
| Flash point | 120 °F (49 °C) Method: DIN 51755 Part 1 |
| Evaporation rate | No information available. |
| Flammability (solid, gas) | No information available. |

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| | |
|--|---|
| Lower explosion limit | 2.0 %(V) |
| Upper explosion limit | 10.2 %(V) |
| Vapor pressure | 4 hPa at 68 °F (20 °C) |
| Relative vapor density | 3.53 |
| Density | 1.08 g/cm ³ at 68 °F (20 °C) Method: DIN 51757 |
| Relative density | No information available. |
| Water solubility | at 68 °F (20 °C) Hydrolysis, Risk of violent reaction. |
| Partition coefficient: n-octanol/water | No information available. |
| Autoignition temperature | 601 °F (316 °C) |
| Decomposition temperature | No information available. |
| Viscosity, dynamic | 0.91 mPa.s at 68 °F (20 °C) |
| Explosive properties | Not classified as explosive. |
| Oxidizing properties | none |
| Ignition temperature | 626 °F (330 °C) Method: DIN 51794 |

SECTION 10. Stability and reactivity

Reactivity

Vapor/air-mixtures are explosive at intense warming.

Chemical stability

sensitive to moisture

Possibility of hazardous reactions

Risk of explosion with:

ethanol, potassium permanganate, Strong oxidizing agents, perchloric acid, Nitric acid, hydrogen peroxide, chromium(VI) oxide, barium peroxide, SODIUM PEROXIDE, peroxi compounds

Exothermic reaction with:

Ammonia, Potassium hydroxide, nitrates, Sodium hydroxide, Acetic acid, diluted

Violent reactions possible with:

Water

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Possible formation of:

acetic acid

ammonium nitrate, with, Nitric acid

Conditions to avoid

Heating.

Incompatible materials

Iron, Copper

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

Acute oral toxicity

LD50 Rat: 630 mg/kg

absorption

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach., Pulmonary failure possible after aspiration of vomit., Stomach/intestinal disorders, Bloody vomiting

Acute inhalation toxicity

Corrosive to respiratory system.

absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Acute dermal toxicity

LD50 Rabbit: 4,320 mg/kg

(RTECS)

Skin irritation

Causes burns.

Eye irritation

Rabbit

Result: Severe irritations

(IUCLID)

Causes serious eye damage.

Risk of blindness!

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Genotoxicity in vitro

Ames test

Result: negative

(IUCLID)

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

| | |
|-------|--|
| IARC | No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. |
| OSHA | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. |
| NTP | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. |
| ACGIH | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. |

Further information

Decomposition of the substance with tissue moisture.

After absorption:

shock, Coma, respiratory arrest, cardiovascular disorders

Damage to:

Kidney, Changes in the blood count

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 *Leuciscus idus* (Golden orfe): 265 mg/l; 48 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates

EC50 *Daphnia magna* (Water flea): 55 mg/l; 24 h (IUCLID)

EC5 *E.sulcatum*: 78 mg/l; 72 h (Lit.) (maximum permissible toxic concentration)

Toxicity to algae

IC5 *Scenedesmus quadricauda* (Green algae): 4,000 mg/l; 16 h (Lit.) (maximum permissible toxic concentration)

Cell multiplication inhibition test EC10 *Desmodesmus subspicatus* (green algae): 3,400 mg/l; 8 d (External MSDS)

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Toxicity to bacteria

EC50 Photobacterium phosphoreum: 11 mg/l; 15 min (Lit.)

Cell multiplication inhibition test EC10 Pseudomonas putida: 1,150 mg/l; 16 h (External MSDS)

Persistence and degradability

Biodegradability

> 95 %; 5 d

OECD Test Guideline 302B

Readily eliminated from water

Bioaccumulative potential

No information available.

Mobility in soil

No information available.

Other adverse effects

Surface tension

31.9 mN/m

at 77 °F (25 °C)

Additional ecological information

The following may develop after reaction of the product with water: acetic acid

Harmful effect due to pH shift. Caustic even in diluted form.

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

| | |
|---------------------------|------------------|
| UN number | UN 1715 |
| Proper shipping name | ACETIC ANHYDRIDE |
| Class | 8 (3) |
| Packing group | II |
| Environmentally hazardous | -- |

Air transport (IATA)

| | |
|------------------------------|------------------|
| UN number | UN 1715 |
| Proper shipping name | ACETIC ANHYDRIDE |
| Class | 8 (3) |
| Packing group | II |
| Environmentally hazardous | -- |
| Special precautions for user | no |

Sea transport (IMDG)

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| | |
|------------------------------|------------------|
| UN number | UN 1715 |
| Proper shipping name | ACETIC ANHYDRIDE |
| Class | 8 (3) |
| Packing group | II |
| Environmentally hazardous | -- |
| Special precautions for user | yes |
| EmS | F-E S-C |

SECTION 15. Regulatory information

United States of America

SARA 313

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Ingredients

Acetic anhydride

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Ingredients

Acetic anhydride

DEA List I

Not listed

DEA List II

Listed

Ingredients

Acetic anhydride

108-24-7

US State Regulations

Massachusetts Right To Know

Ingredients

Acetic anhydride

Pennsylvania Right To Know

Ingredients

Acetic anhydride

New Jersey Right To Know

Ingredients

Acetic anhydride

California Prop 65 Components

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

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Notification status

TSCA: All components of the product are listed in the TSCA-inventory.
DSL: All components of this product are on the Canadian DSL.
KOREA: Not in compliance with the inventory

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Labeling

Hazard pictograms



Signal Word

Danger

Hazard Statements

H226 Flammable liquid and vapor.
H302 + H332 Harmful if swallowed or if inhaled.
H314 Causes severe skin burns and eye damage.

Precautionary Statements

Prevention

P210 Keep away from heat.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Full text of H-Statements referred to under sections 2 and 3.

| | |
|------|--|
| H226 | Flammable liquid and vapor. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |
| H332 | Harmful if inhaled. |

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

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The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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