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

Revision Date 12/05/2018 Version 1.11

SECTION 1.Identification

Product identifier

Product number	137000
Product name	Acetic acid (glacial) 100% EMPROVE® EXPERT Ph Eur,BP,JP,USP
CAS-No.	64-19-7

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

Identified uses	Pharmaceutical production

Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation | 400 Summit Drive | Burlington | Massachusetts 01803 | United States of America | General Inquiries: +1 800-645-5476 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5) MilliporeSigma is a business of Merck KGaA, Darmstadt, Germany.
Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

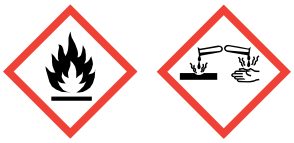
GHS Classification

Flammable liquid, Category 3, H226
Skin corrosion, Category 1A, 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.
H314 Causes severe skin burns and eye damage.

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.
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep 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/doctor.
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 to extinguish.
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_3COOH	$C_2H_4O_2$ (Hill)

Molar mass 60.05 g/mol

Hazardous ingredients

Chemical name (Concentration)
CAS-No.
acetic acid (>= 90 % - <= 100 %)
64-19-7
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. Call in physician.

Skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

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

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, bronchitis, Shortness of breath, gastric spasms, Nausea, Vomiting, Circulatory collapse, shock
Risk of corneal clouding.
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
Water, Foam, Carbon dioxide (CO2), Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

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

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
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system. Remove container from danger zone and cool with water.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
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 let product enter 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.

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
acetic acid 64-19-7			
ACGIH	Time Weighted Average (TWA):	10 ppm	
	Short Term Exposure Limit (STEL):	15 ppm	
NIOSH/GUIDE	Recommended exposure limit (REL):	10 ppm 25 mg/m³	
	Short Term Exposure Limit (STEL):	15 ppm 37 mg/m³	
OSHA_TRANS	PEL:	10 ppm 25 mg/m³	
Z1A	Time Weighted Average (TWA):	10 ppm 25 mg/m³	

Engineering measures
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

full contact:

Glove material:	butyl-rubber
Glove thickness:	0.7 mm
Break through time:	480 min

splash contact:

Glove material:	natural latex
Glove thickness:	0.6 mm
Break through time:	30 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (full contact), KCL 706 Lapren® (splash contact).
The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.
This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment:
Flame retardant antistatic protective clothing.

Respiratory protection
required when vapors/aerosols are generated.
Recommended Filter type: filter E-(P2)
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer.
These measures have to be properly documented.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	stinging
Odor Threshold	0.2 - 100.1 ppm
pH	2.5 at 50 g/l 68 °F (20 °C)

Melting point	63 °F (17 °C)
Boiling point/boiling range	241 - 244 °F (116 - 118 °C) at 1,013 hPa
Flash point	102 °F (39 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	4 %(V)
Upper explosion limit	19.9 %(V)
Vapor pressure	15.4 hPa at 68 °F (20 °C)
Relative vapor density	2.07
Density	1.05 g/cm3 at 68 °F (20 °C)
Relative density	No information available.
Water solubility	602.9 g/l at 77 °F (25 °C)
Partition coefficient: n-octanol/water	log Pow: -0.17 (25 °C) (experimental) (ECHA) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	Distillable in an undecomposed state at normal pressure.
Viscosity, dynamic	1.22 mPa.s at 68 °F (20 °C)
Explosive properties	Not classified as explosive.

Oxidizing properties	none
Ignition temperature	905 °F (485 °C)
Viscosity, kinematic	1.17 mm2/s at 68 °F (20 °C)

SECTION 10. Stability and reactivity

Reactivity
Vapor/air-mixtures are explosive at intense warming.

Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions
Risk of explosion with:

peroxi compounds, perchloric acid, fuming sulfuric acid, phosphorus halides, hydrogen peroxide, chromium(VI) oxide, potassium permanganate, Peroxides, Strong oxidizing agents

Risk of ignition or formation of inflammable gases or vapors with:

Metals, Iron, Zinc, magnesium, Mild steel

Possible formation of:

Hydrogen

Violent reactions possible with:

strong alkalis, Aldehydes, alkali hydroxides, nonmetallic halides, ethanolamine, Acetaldehyde, Alcohols, halogen-halogen compounds, chlorosulfonic acid, chromosulfuric acid, Potassium hydroxide, Nitric acid

Conditions to avoid
Temperatures < 63 °F.
Heating.

Incompatible materials
no information available

Hazardous decomposition products
in the event of fire: See section 5.
no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Inhalation, Eye contact, Skin contact

Target Organs
Eyes
Skin
Respiratory system
teeth

Acute oral toxicity
LD50 Rat: 3,310 mg/kg (RTECS)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach., Nausea, Vomiting, Risk of aspiration upon vomiting., Pulmonary failure possible after aspiration of vomit.

Acute inhalation toxicity
LCLO Rat: 39.95 mg/l; 4 h
(RTECS)

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract, Pneumonia, bronchitis, Inhalation may lead to the formation of oedemas in the respiratory tract., Symptoms may be delayed.

Corrosive to respiratory system.

Skin irritation
Rabbit
Result: Causes burns.
(IUCLID)

Causes severe burns.

Eye irritation
Rabbit
Result: Causes burns.
(IUCLID)

Causes serious eye damage.
Risk of blindness!

Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471

Mutagenicity (mammal cell test): chromosome aberration.
Result: negative
Method: OECD Test Guideline 473

Teratogenicity
Did not show teratogenic effects in animal experiments. (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 component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
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
Systemic effects:
Shortness of breath, gastric spasms, shock, Circulatory collapse, acidosis
Possible damages:
Damage to:
Kidney
Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish
semi-static test LC50 Oncorhynchus mykiss (rainbow trout): > 300.8 mg/l; 96 h
OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates
EC5 E.sulcatum: 78 mg/l; 72 h neutral (maximum permissible toxic concentration)
(Lit.)

EC50 Daphnia magna (Water flea): 47 mg/l; 24 h (Lit.)

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

Toxicity to bacteria
EC5 Pseudomonas putida: 2,850 mg/l; 16 h neutral (maximum permissible toxic concentration) (Lit.)

microtox test EC50 Photobacterium phosphoreum: 11 mg/l; 15 min (IUCLID)

Persistence and degradability

Biodegradability
99 %; 30 d
OECD Test Guideline 301D
(HSDB)
Readily biodegradable.

95 %; 5 d
OECD Test Guideline 302B
Readily eliminated from water

Biochemical Oxygen Demand (BOD)
880 mg/g (5 d)
(Lit.)

Ratio BOD/ThBOD
BOD5 76 %
(IUCLID)

Bioaccumulative potential

Partition coefficient: n-octanol/water
log Pow: -0.17 (25 °C)
(experimental)
(ECHA) Bioaccumulation is not expected.

Mobility in soil

No information available.

Additional ecological information
Biological effects:
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 2789
Proper shipping name	ACETIC ACID, GLACIAL
Class	8 (3)
Packing group	II
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 2789
Proper shipping name	ACETIC ACID, GLACIAL
Class	8 (3)
Packing group	II
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 2789
Proper shipping name	ACETIC ACID, GLACIAL
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 acid
The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:
Ingredients
acetic acid
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

DEA List I
Not listed

DEA List II
Not listed

US State Regulations

Massachusetts Right To Know
Ingredients
acetic acid

Pennsylvania Right To Know
Ingredients
acetic acid

New Jersey Right To Know
Ingredients
acetic acid

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.

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

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.
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.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.

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.

Revision Date12/05/2018

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