SAFETY DATA SHEET

Version 8.5
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Chloroform for analysis EMSURE® ACS,ISO,Reag. Ph Eur

Product Number : 1.02445
Catalogue No. : 102445
Brand : Millipore
CAS-No. : 67-66-3

1.2 Other means of identification

No data available

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

Identified uses : Reagent for analysis, Chemical production

1.4 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pty. Ltd.
Suite 1, Level 1, Building B
11 Talavera Road
MACQUARIE PARK NSW 2113
AUSTRALIA

Telephone : +61 1800 800 097

1.5 Emergency telephone

Emergency Phone # : Free call (24/7): 1800 448 465
Int'l (24/7): +61 2 9037 2994
(CHEMTREC)

SECTION 2: Hazards identification

2.1 GHS Classification

Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 3), H331
Skin corrosion/irritation (Category 2), H315
Serious eye damage/eye irritation (Category 2), H319
Carcinogenicity (Category 2), H351
Reproductive toxicity (Category 2), H361
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336
Specific target organ toxicity - repeated exposure, Oral (Category 1), Liver, Kidney, H372

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

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word	Danger

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure if swallowed.

Precautionary statement(s)

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P304 + P340 + P311	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.

Disposal

P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients

Substance / Mixture : Substance

3.1 Substances

Formula	:	CHCl3
Molecular weight	:	119.38 g/mol
CAS-No.	:	67-66-3
EC-No.	:	200-663-8
Index-No.	:	602-006-00-4

Hazardous ingredients

Component	Classification	Concentration
Chloroform		
	Acute Tox. 4; Acute Tox. 3; 2; 2A; Carc. 2; Repr. 2; STOT SE 3; STOT RE 1; H302, H331, H315, H319, H351, H361, H336, H372	<= 100 %

	Concentration limits: 20 %: STOT SE 3, H336;	
ethanol		
	Flam. Liq. 2; 2A; H225, H319 Concentration limits: >= 50 %: Eye Irrit. 2A, H319;	>= 1 - < 10 %

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

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Hydrogen chloride gas
Not combustible.
Fire may cause evolution of:
Hydrogen chloride gas, Phosgene

Ambient fire may liberate hazardous vapours.

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

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
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 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 carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

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
Protected from light.Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Recommended storage temperature see product label.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.3 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis

Chloroform	67-66-3	TWA	2 ppm 10 mg/m3	Australia. Workplace Exposure Standards for Airborne Contaminants.
	Remarks	Category 2 (Carc. 2) Suspected human carcinogen Skin absorption		
ethanol	64-17-5	TWA	1,000 ppm 1,880 mg/m3	Australia. Workplace Exposure Standards for Airborne Contaminants.

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. 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).
Full contact
Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. 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).
Splash contact
Material: butyl-rubber
Minimum layer thickness: 0.7 mm
Break through time: 10 min
Material tested:Butoject® (KCL 898)

Body Protection
protective clothing

Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Color: colorless
b)	Odor	sweet
c)	Odor Threshold	205 ppm
d)	pH	No data available
e)	Melting point/freezing point	Melting point: -64 °C
f)	Initial boiling point and boiling range	60.5 - 61.5 °C at 1,013.25 hPa
g)	Flash point	- Regulation (EC) No. 440/2008, Annex, A.9does not flash
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	210 hPa at 20 °C
l)	Vapor density	4.12 - (Air = 1.0)
m)	Relative density	No data available
n)	Water solubility	8.7 g/l at 23 °C - OECD Test Guideline 105- soluble
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	Distillable in an undecomposed state at normal pressure.
r)	Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Solubility in other solvents	organic solvent at 20 °C - miscible
Relative vapor density	4.12 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Sensitivity to light heat-sensitive

The product is chemically stable under standard ambient conditions (room temperature) .
Contains the following stabilizer(s):
ethanol (1 %)

10.3 Possibility of hazardous reactions

Risk of explosion with:
Fluorine
Alkaline earth metals
Powdered metals
Ammonia
Oxygen
nitrogen oxides
alkali amides
strong alkalis
peroxi compounds
organic nitro compounds
Bases
Alkali metals
Methanol
with
alcoholates
Methanol
with
strong alkalis
Iron
in powder form
various alloys
sensitive to shock
Methanol
with
Sodium hydroxide
powdered magnesium
Oxygen
with
alkali compounds
Aluminum
in powder form
Acetone
with
alkali compounds
Potassium
sensitive to shock
sodium
sensitive to shock
Violent reactions possible with:
Light metals
Powdered metals
Ketones
phosphines
semimetallic hydrogen compounds
bis(dimethylamino)dimethyl tin
strong oxidising agents
nonmetallic hydrogen compounds
mineral acids

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
various plastics, RubberStrong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male - 908 mg/kg (Chloroform)
(OECD Test Guideline 401)

Acute toxicity estimate Inhalation - Expert judgment - 4 h - 3.1 mg/l (Chloroform)

Skin corrosion/irritation
Skin - Rabbit (Chloroform)
Result: Irritating to skin. - 24 h
Remarks: (ECHA)
Drying-out effect resulting in rough and chapped skin. (Chloroform)
Skin - Rabbit (Chloroform)
Result: slight irritation
Remarks: (IUCLID)

Serious eye damage/eye irritation
Eyes - Rabbit (Chloroform)
Result: Irritating to eyes.
Remarks: (ECHA)
(Regulation (EC) No 1272/2008, Annex VI) (Chloroform)

Respiratory or skin sensitization
Maximization Test - Guinea pig (Chloroform)
Result: negative
(Regulation (EC) No. 440/2008, Annex, B.6)

Germ cell mutagenicity

Test Type: Ames test
(Chloroform)
Test system: Escherichia coli/Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Result: negative
Remarks: (ECHA)

Test Type: unscheduled DNA synthesis assay
(Chloroform)
Test system: Liver
Metabolic activation: without metabolic activation
Result: negative
Remarks: (ECHA)

(Chloroform)Test Type: Micronucleus test
Species: Rat
Cell type: Red blood cells (erythrocytes)
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

(Chloroform)Test Type: unscheduled DNA synthesis assay
Species: Rat
Cell type: Liver cells
Application Route: Oral
Method: OECD Test Guideline 486
Result: negative

(Chloroform)Test Type: in vivo assay
Species: Mouse

Application Route: Inhalation

Result: negative
Remarks: (ECHA)

Carcinogenicity
No data available

Reproductive toxicity
Suspected of damaging the unborn child. (Chloroform)

Specific target organ toxicity - single exposure
May cause drowsiness or dizziness. (Chloroform)

Specific target organ toxicity - repeated exposure
Oral - Causes damage to organs through prolonged or repeated exposure. - Liver, Kidney

Aspiration hazard
No data available (Chloroform)

11.2 Additional Information

Repeated dose toxicity - Rat - female - Oral - NOAEL (No observed adverse effect level) - 34 mg/kg (Chloroform)
Not available

(Chloroform)
Vomiting, Cough, irritant effects, Shortness of breath, respiratory arrest, narcosis, Dizziness, Nausea, agitation, spasms, inebriation, Headache, Stomach/intestinal disorders, ataxia (impaired locomotor coordination), cardiovascular disorders (Chloroform)
Drying-out effect resulting in rough and chapped skin. (Chloroform)
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Chloroform)

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to algae	static test ErC50 - Chlamydomonas reinhardtii (green algae) - 13.3 mg/l - 72 h (Chloroform) Remarks: (ECHA) (Chloroform)
Toxicity to bacteria	Remarks: (ECHA) (Chloroform)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available (Chloroform)

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1888 IMDG: 1888 IATA-DGR: 1888

14.2 UN proper shipping name
ADR/RID: CHLOROFORM
IMDG: CHLOROFORM
IATA-DGR: Chloroform

14.3 Transport hazard class(es)
ADR/RID: 6.1 IMDG: 6.1 IATA-DGR: 6.1

14.4 Packaging group
ADR/RID: III IMDG: III IATA-DGR: III

14.5 Environmental hazards
ADR/RID: no IMDG Marine pollutant: no IATA-DGR: no

14.6 Special precautions for user
None

14.7 Incompatible materials

various plastics, RubberStrong oxidizing agents

Other regulations

Hazchem Code : 2Z

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Notification status

AICS:	On the inventory, or in compliance with the inventory
DSL:	All components of this product are on the Canadian DSL
ENCS:	On the inventory, or in compliance with the inventory
ISHL:	On the inventory, or in compliance with the inventory
KECI:	On the inventory, or in compliance with the inventory
NZIoC:	Not in compliance with the inventory
PICCS:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

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

H225	Highly flammable liquid and vapor.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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