Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

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

· **1.1 Product identifier**

· **Trade name: Chloroform**

· **Product Code:** 40-1500-05, 40-1500-10
· **CAS Number:**
67-66-3
· **EC number:**
200-663-8
· **Index number:**
602-006-00-4
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Product category**
PC19 Intermediate
PC21 Laboratory chemicals
· **Application of the substance / the mixture**
Intermediate
Solvents
· **Uses advised against** The product is stictly intended for industrial or professional use only.

· **1.3 Details of the supplier of the safety data sheet**
· **Supplier:**
Severn Biotech Ltd.
Unit 2,
Park Lane,
Kidderminster,
Worcestershire.
DY11 6TJ
UK
Tel: 0044 1562 825286
Fax: 0044 1562 825284
email: info@severnbiotech.com

· **Further information obtainable from:** Product safety department.
· **1.4 Emergency telephone number:**
Members of the public seeking specific information on poisons should contact:
In England and Wales: NHS 111 - dial 111
In Scotland: NHS 24 - dial 111

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to GB-CLP**

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 3	H331	Toxic if inhaled.
Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2	H319	Causes serious eye irritation.
Carc. 2	H351	Suspected of causing cancer.
Repr. 2	H361d	Suspected of damaging the unborn child.
STOT RE 1	H372	Causes damage to the central nervous system, the kidneys, the liver and the respiratory system through prolonged or repeated exposure.

· **2.2 Label elements**
· **Labelling according to GB-CLP** The substance is classified and labelled according to the GB CLP regulation.

(Contd. on page 2)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 1)

· **Hazard pictograms**

GHS06 GHS08

· **Signal word** Danger
· **Hazard statements**
H302 Harmful if swallowed.
H331 Toxic if inhaled.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H361d Suspected of damaging the unborn child.
H372 Causes damage to the central nervous system, the kidneys, the liver and the respiratory system through prolonged or repeated exposure.
· **Precautionary statements**
P260 Do not breathe mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local regulations.
· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.1 Substances**
· **CAS No. Description**
CAS: 67-66-3 Chloroform
· **Identification number(s)**
· **EC number:** 200-663-8
· **Index number:** 602-006-00-4

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Protection of first-aiders: If entering a saturated atmosphere, wear self-contained breathing apparatus and protective suit.
· **After inhalation:**
In case of inhalation:
- Provide fresh air.
- In case of breathing difficulties administer oxygen.

(Contd. on page 3)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 2)

- No mouth-to-mouth or mouth-to-nose resuscitation. Use respiratory bag or oxygen resuscitation apparatus.
- Do not leave patient unattended.

In case of unconsciousness place patient stably in side position for transportation.

· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

· **After eye contact:**
Check for and remove any contact lenses.
Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:**
Wash mouth out with water
Do not induce vomiting; call for medical help immediately.
If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

· **Information for doctor:** Do not administer catecholamines (because of the cardiac effect caused by the product).

· **4.2 Most important symptoms and effects, both acute and delayed**
Disorientation
Dizziness

· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**

· **Suitable extinguishing agents:**
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Use fire extinguishing methods suitable to surrounding conditions.

· **For safety reasons unsuitable extinguishing agents:** Water with full jet

· **5.2 Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Carbon monoxide (CO)
Hydrogen chloride (HCl)

· **5.3 Advice for firefighters**

· **Protective equipment:**
Do not inhale explosion gases or combustion gases.
Wear self-contained respiratory protective device.
Wear fully protective suit.

· **Additional information**
Absorb gas/vapours with water spray.
Cool endangered receptacles with water spray.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
Wear protective equipment. Keep unprotected persons away.
Keep ignition sources away - no smoking.
Use respiratory protective device against the effects of fumes/dust/aerosol.
Remove persons from danger area.

· **6.2 Environmental precautions:**
Do not allow product to reach sewage system or any water course.

(Contd. on page 4)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 3)

Do not allow to penetrate the ground/soil.
Inform respective authorities in case of seepage into water course or sewage system.

· **6.3 Methods and material for containment and cleaning up:**
Contain and collect spillage with non-combustible, absorbent material e.g.sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.
Contaminated absorbent material may pose the same hazard as the spilt product.
Significant release:
Pump into a clean labelled emergency container. After cleaning, flush away traces with water. Recover water for later processing.

· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Prevent formation of aerosols.
Ensure good ventilation/exhaustion at the workplace.
Keep away from heat and direct sunlight.
Restrict the quantity stored at the work place.
Avoid direct contact (skin/eye contact, ingestion and/or inhalation of fume/mist/dust) with the product in the undiluted form.
Safety showers and eye wash facilities should be available at the work area.
The product must only be handled by authorised, trained and experienced professionals under strictly controlled conditions.
Conduct maintenance and other work on or in storage/reactor/mixing vessels or closed spaces ONLY under strict Permit to Work conditions.
Welding and other hot work operations in the work area must only be permitted under supervision.

· **Information about fire - and explosion protection:**
Keep ignition sources away - Do not smoke.
Protect from heat.
Keep respiratory protective device available.

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.
· **Information about storage in one common storage facility:**
Store away from oxidising agents.
Store away from metals.
Do not store together with acids.
· **Further information about storage conditions:**
Store in a bunded area.
Store in cool, dry conditions in well sealed receptacles.
Protect from heat and direct sunlight.
· **Storage class:** 6.1 D
· **7.3 Specific end use(s)** No further relevant information available.

(Contd. on page 5)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 4)

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SECTION 8: Exposure controls/personal protection

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**	
CAS: 67-66-3 Chloroform	
WEL	Long-term value: 9.9 mg/m³, 2 ppm Sk

· **DNELs**		
Dermal	Long-term systemic effects	2.86 mg/kg bw/day (worker)
Inhalative	Long-term systemic effects	2.5 mg/m³ (worker)
	Short-term systemic effects	5 mg/m³ (worker)
	Long-term local effects	2.5 mg/m³ (worker)
	Short-term local effects	5 mg/m³ (worker)

· **PNECs**	
Freshwater	146 µg/L
Marine water	15 µg/L
Sewage Treatment Plant	48 µg/L
Sediment (freshwater)	450 µg/kg
Sediment (marine water)	90 µg/kg
Soil	560 µg/kg

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**
· **Appropriate engineering controls** No further data; see section 7.
· **Individual protection measures, such as personal protective equipment**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
Take note of assigned Workplace Exposure Limits.
Ensure that eyewash stations and safety showers are close to the workstation location.
Depending on the degree of exposure, periodic medical examination is suggested.
Pregnant women should strictly avoid inhalation or skin contact.
A safe system of work must be formulated and followed to ensure safe working with this product. Relevant workers must receive suitable and sufficient training and supervision.
· **Respiratory protection:**
Use suitable respiratory protective device in case of insufficient ventilation.
Filter AXP3
· **Hand protection**

Protective gloves.
Use gloves tested and approved under appropriate government standards such as NIOSH (US) or EN374 (EU).

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

(Contd. on page 6)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 5)

· **Material of gloves**
Fluorocarbon rubber (Viton)
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye/face protection**

Safety glasses with side-shields conforming to EN166.
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

· **Body protection:**

Protective work clothing

Do not get on skin or clothing. Wear clothing and footwear that cannot be penetrated by the product. Suitable protective equipment may include: Chemical resistant boots, Chemical resistant apron, Full chemical protective suit with a hood, Chemical protective suit consisting of a jacket and trousers. The jacket should be buttoned up to the neck, sleeves sealed at the gloves, and trouser legs worn outside the boots. These precautions are required to prevent the clothing from accidentally trapping product against the skin.
· **Environmental exposure controls** Do not allow to enter drains, sewers or watercourses.
· **Risk management measures**
The operators shall be instructed adequately.
The workplace shall be inspected regularly by competent personnel e.g. the safety representative.

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SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Physical state**	Liquid
· **Colour:**	Colourless
· **Odour:**	Pleasant
· **Odour threshold:**	Not determined.
· **Melting point/freezing point:**	-63 °C
· **Boiling point or initial boiling point and boiling range**	62 °C
· **Flammability**	Not applicable.
· **Lower and upper explosion limit**	
· **Lower:**	Not determined.
· **Upper:**	Not determined.
· **Flash point:**	Cannot promote combustion
· **Decomposition temperature:**	Not determined.
· **pH**	Not determined.
· **Viscosity:**	
· **Kinematic viscosity**	Not determined.
· **Dynamic at 20 °C:**	0.56 mPas
· **Solubility**	
· **water at 20 °C:**	8 g/l
· **Partition coefficient n-octanol/water (log value)**	1.97 log POW
· **Vapour pressure at 20 °C:**	210 hPa

(Contd. on page 7)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 6)

· **Density and/or relative density**	
· **Density at 20 °C:**	1.48 g/cm³
· **Relative density**	Not determined.
· **Vapour density**	Not determined.
· **9.2 Other information**	
· **Appearance:**	
· **Form:**	Fluid
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	Not determined.
· **Explosive properties:**	Product does not present an explosion hazard.
· **Change in condition**	
· **Evaporation rate**	Not determined.
· **Information with regard to physical hazard classes**	
· **Explosives**	Not applicable
· **Flammable gases**	Not applicable
· **Aerosols**	Not applicable
· **Oxidising gases**	Not applicable
· **Gases under pressure**	Not applicable
· **Flammable liquids**	Not applicable
· **Flammable solids**	Not applicable
· **Self-reactive substances and mixtures**	Not applicable
· **Pyrophoric liquids**	Not applicable
· **Pyrophoric solids**	Not applicable
· **Self-heating substances and mixtures**	Not applicable
· **Substances and mixtures, which emit flammable gases in contact with water**	Not applicable
· **Oxidising liquids**	Not applicable
· **Oxidising solids**	Not applicable
· **Organic peroxides**	Not applicable
· **Corrosive to metals**	Not applicable
· **Desensitised explosives**	Not applicable

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SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:** Decomposes on heating, producing toxic fumes.
· **10.3 Possibility of hazardous reactions**
Reacts with acids.
Reacts with oxidising agents.
Reacts violently with bases.
· **10.4 Conditions to avoid** Heat and static discharge.
· **10.5 Incompatible materials:**
Strong acids.
Strong bases.
Strong oxidising agents.
Finely powdered metals.
Oxygen

(Contd. on page 8)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 7)

· **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Hydrogen chloride (HCl)
Phosgene

SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
· **Acute toxicity**
Harmful if swallowed.
Toxic if inhaled.

· **LD/LC50 values relevant for classification:**		
Oral	LD50	1,100 mg/kg (rat)
Dermal	LD50	> 4,000 mg/kg (rat)

· **Primary irritant effect:**
· **Skin corrosion/irritation**
Causes skin irritation.
· **Serious eye damage/irritation**
Causes serious eye irritation.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity**
Suspected of causing cancer.
· **Reproductive toxicity**
Suspected of damaging the unborn child.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure**
Causes damage to the central nervous system, the kidneys, the liver and the respiratory system through prolonged or repeated exposure.
· **Aspiration hazard** Based on available data, the classification criteria are not met.
· **Additional toxicological information:**
ROUTES OF EXPOSURE: Can be absorbed into the body by inhalation and by ingestion.
· **11.2 Information on other hazards**
· **Endocrine disrupting properties** Substance is not listed.

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
EC50 (96 h)	353 mg/l (Bacteria)

· **12.2 Persistence and degradability** No further relevant information available.
· **12.3 Bioaccumulative potential** Product is not expected to bioaccumulate.
· **12.4 Mobility in soil** No further relevant information available.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Endocrine disrupting properties** The product does not contain substances with endocrine disrupting properties.

(Contd. on page 9)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 8)

· **12.7 Other adverse effects**
· **Additional ecological information:**
· **General notes:**
Water hazard class 3 (German Regulation) (Assessment by list): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.

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SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Recommended Hierarchy of Controls:
- Minimise waste;
- Reuse if not contaminated;
- Recycle, if possible; or
- Safe disposal (if all else fails).
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Contact waste processors for recycling information.
Used, degraded or contaminated product may be classified as hazardous waste. Anyone classifying hazardous waste and determining its fate must be qualified in accordance with state and international legislation.

· **Uncleaned packaging:**
· **Recommendation:**
Empty contaminated packagings thoroughly. They may be recycled after thorough and proper cleaning.
Disposal must be made according to official regulations.
Container remains hazardous when empty. Continue to observe all precautions.
Do not mix with other waste streams.
Containers, even those that are “empty,” may contain residues that can develop flammable and/or hazardous vapours upon heating. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.
· **Recommended cleansing agents:** Water, if necessary together with cleansing agents.

SECTION 14: Transport information

· **14.1 UN number or ID number**	
· **ADR/RID/ADN, IMDG, IATA**	UN1888
· **14.2 UN proper shipping name**	
· **ADR/RID/ADN**	UN1888 CHLOROFORM
· **IMDG, IATA**	CHLOROFORM
· **14.3 Transport hazard class(es)**	
· **ADR/RID/ADN**	

· **Class**	6.1 (T1) Toxic substances.

(Contd. on page 10)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

Printing date 17.04.2025 Version number 5 (replaces version 4) Revision: 17.04.2025

Trade name: Chloroform

(Contd. of page 9)

· **Label**	6.1
· **IMDG, IATA**	
	
· **Class**	6.1 Toxic substances.
· **Label**	6.1
· **14.4 Packing group**	
· **ADR/RID/ADN, IMDG, IATA**	III
· **14.5 Environmental hazards:**	
· **Marine pollutant:**	No
· **14.6 Special precautions for user**	Warning: Toxic substances.
· **Hazard identification number (Kemler code):**	60
· **Hazchem Code:**	2Z
· **EMS Number:**	F-A,S-A
· **Segregation groups**	(SGG10) Liquid halogenated hydrocarbons
· **Stowage Category**	A
· **Stowage Code**	SW2 Clear of living quarters.
· **14.7 Maritime transport in bulk according to IMO instruments**	Not applicable.
· **Transport/Additional information:**	
· **ADR/RID/ADN**	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **Transport category**	2
· **Tunnel restriction code**	E
· **IMDG**	
· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation":**	UN 1888 CHLOROFORM, 6.1, III

SECTION 15: Regulatory information

· **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Poisons Act**
· **Regulated explosives precursors** Substance is not listed.
· **Regulated poisons** Substance is not listed.
· **Reportable explosives precursors** Substance is not listed.
· **Reportable poisons** Substance is not listed.

(Contd. on page 11)

Safety data sheet
according to UK REACH (SI 2020/1577) as amended

(Contd. of page 10)

· **Control Of Major Accident Hazards Regulations 2015 (COMAH)**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **COMAH category** H2
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 50 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
This Safety Data Sheet is in compliance with Regulation (EC) No 1907/2006, Article 31 as amended by Regulation (EU) 2020/878.

· **Training hints**
This product should only be handled by workers who have received sufficient training in the safe handling and use of chemical products.

· **Department issuing SDS:** Product safety department.
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (UK REACH)
PNEC: Predicted No-Effect Concentration (UK REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity – Category 4
Acute Tox. 3: Acute toxicity – Category 3
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Carc. 2: Carcinogenicity – Category 2
Repr. 2: Reproductive toxicity – Category 2
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
· *** Data compared to the previous version altered.**