

CHLOROFORM (13C, 99%)

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 /

Rules and Regulations

Date of issue: 11/12/2014 Revision date: 23/09/2015 Supersedes: 21/01/2015 Version: 3.0

CLM-262

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

1.1. Product identifier

Product form : Substance

Substance name : CHLOROFORM (13C, 99%)

EC index no : 602-006-00-4
EC no : 200-663-8
CAS No : 31717-44-9
Product code : CLM-262
Formula : *CHCl3

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

1.2.1. Relevant identified uses

Industrial/Professional use spec : For professional use only.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.

50 Frontage Road Andover, MA 01810

USA

USA: 1-800-322-1174 Int: 1-978-749-8000 <u>cilsales@isotope.com</u> www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours) International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute Tox. 4 (Oral) H302
Acute Tox. 3 (Inhalation) H331
Skin Irrit. 2 H315
Eye Irrit. 2 H319
Carc. 2 H351
Repr. 2 H361fd
STOT SE 3 H336
STOT RE 1 H372

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Xn; R22 Xi; R36/38 T; R48/23 R67 R52

Carc.Cat.3; R40 Repr.Cat.3; R62 Repr.Cat.3; R63

Full text of R-phrases: see section 16

Classification (GHS-US)

Acute Tox. 4 (Oral) H302 Acute Tox. 3 (Inhalation) H331 Skin Irrit. 2 H315

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Eye Irrit. 2A	H319
Carc. 2	H351
Repr. 2	H361
STOT SE 3	H336
STOT RE 1	H372
Aquatic Acute 3	H402

Adverse physicochemical, human health and environmental effects

Central nervous system, Blood, Liver, Cardiovascular system, Kidney,

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)







Signal word (CLP) : Danger

Hazard statements (CLP) : 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

H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child

H372 - Causes damage to organs (central nervous system, kidneys, liver) through prolonged or

repeated exposure

Precautionary statements (CLP) : P260 - Do not breathe vapors, spray, mist, gas, fume, dust

P264 - Wash Both hands thoroughly after handling P270 - Do no eat, drink or smoke when using this product P271 - Use only outdoors or in a well-ventilated area P280 - Wear protective gloves, protective clothing

P301+P312 - IF SWALLOWED: Call a POISON CENTER/doctor/.../if you feel unwell

P302+P352 - IF ON SKIN: Wash with plenty of water/...

P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

GHS-US labeling

Hazard pictograms (GHS-US)







Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : 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 (Dermal, Inhalation, oral)

H361 - (Dermal, Inhalation, oral)

H372 - Causes damage to organs (central nervous system, kidneys, liver) through prolonged or repeated exposure (Dermal, Inhalation, oral)

H402 - Harmful to aquatic life

Precautionary statements (GHS-US) : 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, spray, vapors P261 - Avoid breathing dust, fume, gas, mist, spray, vapors P264 - Wash Both hands thoroughly after handling P270 - Do no eat, drink or smoke when using this product P271 - Use only outdoors or in a well-ventilated area

P273 - Avoid release to the environment

P280 - Wear eye protection, face protection, protective clothing, protective gloves

P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

P302+P352 - IF ON SKIN: Wash with plenty of soap and water

P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable

for breathing

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P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact

STOT SE 3, H336 STOT RE 1, H372

lenses, if present and easy to do. Continue rinsing

P308+P313 - IF exposed or concerned: Get medical advice/attention

P311 - Call a POISON CENTER or doctor/physician

P312 - Call a POISON CENTER/doctor/physician if you feel unwell

P314 - Get medical advice and attention if you feel unwell

P321 - Specific treatment (see Hazard pictograms (CLP) on this label)

P330 - If swallowed, rinse mouth

P332+P313 - If skin irritation occurs: Get medical advice/attention P337+P313 - If eye irritation persists: Get medical advice/attention P362 - Take off contaminated clothing and wash before reuse

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

P405 - Store locked up

P501 - Dispose of contents/container to Comply with applicable regulations.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Directive 67/548/EEC
CHLOROFORM (13C, 99%) (Main constituent)	(CAS No) 31717-44-9 (EC no) 200-663-8 (EC index no) 602-006-00-4	100	Xn; R22 Xi; R36/38 T; R48/23 R67 R52 Carc.Cat.3; R40 Repr.Cat.3; R62 Repr.Cat.3; R63
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
CHLOROFORM (13C, 99%) (Main constituent)	(CAS No) 31717-44-9 (EC no) 200-663-8 (EC index no) 602-006-00-4	100	Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Inhalation), H331 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 Repr. 2, H361fd

Full text of R-, H- and EUH-phrases: see section 16

Name	Product identifier	%	Classification (GHS-US)
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Full text of H-phrases: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Move out of dangerous area. Consult a physician and show this safety data sheet.

First-aid measures after inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give

oxygen. Get immediate medical attention.

First-aid measures after skin contact : Wash with soap and plenty of water. Consult a physician.

First-aid measures after eye contact : Flush eye with water for 15 minutes. Get medical attention.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May be harmful if inhaled. Causes respiratory tract irritation.

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Symptoms/injuries after skin contact : Harmful if absorbed through skin. Causes skin irritation.

Symptoms/injuries after eye contact : Causes eye irritation.
Symptoms/injuries after ingestion : Harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

No additional information available

5.3. Advice for firefighters

Protection during firefighting

: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures

: Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3. Methods and material for containment and cleaning up

For containment

 Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed

: Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Normal measures for preventive fire protection.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures

: Keep container tightly closed in a cool, dry and well-ventilated place. Opened containers must be carefully resealed and kept upright to prevent leakage.

Storage conditions

: Store refrigerated (-5 C to 5 C). Protect from light.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

CHLOROFORM (13C, 99%) (31717-44-9)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	10.0000000000 ppm Confirmed animal carcinogen with unknown relevance to humans.
USA NIOSH	NIOSH REL (STEL) (mg/m3)	9.78 mg/m³
USA NIOSH	NIOSH REL (STEL) (ppm)	2 ppm
USA OSHA	OSHA PEL (Ceiling) (mg/m3)	240
USA OSHA	OSHA PEL (Ceiling) (ppm)	50 ppm

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Exposure controls

Personal protective equipment : Gloves. Protective goggles. Protective clothing. Self-contained breathing apparatus.



Hand protection : Wear suitable protective clothing and gloves.

: Wear safety glasses with side shields (or goggles) and a face shield. Eye protection

Skin and body protection : Wear complete suit protecting against chemicals according to concentration and amount of

substance. Use suitable gloves. Use proper glove removal technique. Wash and dry hands.

Respiratory protection : Wear appropriate NIOSH/MSHA approved respirator.

SECTION 9: Physical and chemical properties

The properties listed below are for the solvent, the main component of this mixture.

Information on basic physical and chemical properties

: Liquid Physical state Appearance : Liquid, clear. : 120.37 g/mol Molecular mass Color : Colourless

Odor : No data available Odor threshold : No data available : No data available pΗ : No data available Relative evaporation rate (butyl acetate=1) Melting point : -63 °C (-81 °F) : No data available Freezing point

: 60.5 - 61.5 °C (140.9 - 142.7 °F) Boiling point

: No data available Flash point Self ignition temperature : No data available : No data available Decomposition temperature : No data available Flammability (solid, gas)

Vapor pressure : 213.3 hPa (160.0 mmHg) at 20.0 °C (68.0 °F)

Relative vapor density at 20 °C : No data available Relative density : No data available

: 1.492 g/cm3 at 25 °C (77 °F) Density

: No data available Solubility

Log Pow : 1.97

: No data available Log Kow Viscosity, kinematic : No data available : No data available Viscosity, dynamic : No data available Explosive properties : No data available Oxidizing properties Explosive limits : No data available

Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

Chemical stability

Two years after receipt if stored as stated in "Storage" section. Re-QC after 2 years.

Possibility of hazardous reactions

No additional information available

10.4. **Conditions to avoid**

Not available.

Incompatible materials

Strong oxidizing agents, Strong bases, Magnesium, Sodium/Sodium oxides, Lithium.

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10.6. Hazardous decomposition products

Formed under fire conditions: Carbon oxides, Hydrogen chloride gas.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed. Toxic if inhaled.

CHLOROFORM (13C, 99%) (31717-44-9)	
LD50 oral rat	908 mg/kg
LD50 dermal rabbit	> 20000 mg/kg
LC50 inhalation rat (mg/l)	47702 mg/m³ 4 h
ATE (oral)	695.000 mg/kg body weight
ATE (gases)	700.000 ppmV/4h
ATE (vapors)	3.000 mg/l/4h
ATE (dust, mist)	0.500 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.

No data available

Serious eye damage/irritation : Causes serious eye irritation.

No data available : Not available.

No data available Germ cell mutagenicity : Not available.

Carcinogenicity : Suspected of causing cancer.

Reproductive toxicity : Not available.

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

No data available

Specific target organ toxicity (repeated

Respiratory or skin sensitization

exposure)

: Causes damage to organs (central nervous system, kidneys, liver) through prolonged or

repeated exposure.

No data available

Aspiration hazard : Not classified

IARC group : 2E

Symptoms/injuries after inhalation : May be harmful if inhaled. Causes respiratory tract irritation. Symptoms/injuries after skin contact : Harmful if absorbed through skin. Causes skin irritation.

Symptoms/injuries after eye contact : Causes eye irritation.
Symptoms/injuries after ingestion : Harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

CHLOROFORM (13C, 99%) (31717-44-9)	
LC50 fish 1	162.00 mg/l Leuciscus idus (Golden orfe) - 48 h
LC50 other aquatic organisms 1	97 mg/l Other fish - 96 h
EC50 Daphnia 1	79.00 mg/l Daphnia magna (Water flea) - 48 h
EC50 other aquatic organisms 1	500 mg/l No information available - 24 h
LC50 fish 2	121 mg/l Danio rerio (zebra fish) - 96 h
ErC50 (algae)	500.00 mg/l 24 h
NOEC (chronic)	122 mg/l Oryzias latipes - 10 d
NOEC chronic fish	24 mg/l oncorhynchus mykiss (rainbow trout) - 96 h
NOEC chronic algae	120 mg/l Daphnia magna (water flea) - 11 d

12.2. Persistence and degradability

CHLOROFORM (13C, 99%) (31717-44-9)	
Persistence and degradability	Not available.

12.3. Bioaccumulative potential

CHLOROFORM (13C, 99%) (31717-44-9)	
BCF fish 1	-0.11 mg/l Lepomis macrochirus (Bluegill) - 14 d
Bioconcentration factor (BCF REACH)	6
Log Pow	1.97

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CHLOROFORM (13C, 99%) (31717-44-9)	
Bioaccumulative potential	Not available.

12.4. Mobility in soil

CHLOROFORM (13C, 99%) (31717-44-9)

Ecology - soil Not available.

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects

: An environmental hazard cannot be excluded in the event of an unprofessional handling or disposal. Harmful to aquatic life.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)

: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact licensed disposal company to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an after burner and scrubber.

Waste disposal recommendations : Dispose of as unused product.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT) : 1888 DOT NA no. UN1888

14.2. UN proper shipping name

DOT Proper Shipping Name

: Chloroform

Department of Transportation (DOT) Hazard

: 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132

Classes
Hazard labels (DOT)

: 6.1 - Poison inhalation hazard



Packing group (DOT)

: III - Minor Danger

DOT Special Provisions (49 CFR 172.102)

: IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).

N36 - Aluminum or aluminum alloy construction materials are permitted only for halogenated hydrocarbons that will not react with aluminum.

T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)

TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.

DOT Packaging Exceptions (49 CFR 173.xxx) : 153

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT RQ : 10 lbs

14.3. Additional information

Other information : No supplementary information available.

Overland transport

Packing group (ADR) : III

Class (ADR) : 6.1 - Toxic substances

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Hazard identification number (Kemler No.) : 60
Classification code (ADR) : T1

Danger labels (ADR) : 6.1 - Toxic substances

6

Orange plates

60 1888

Tunnel restriction code : E
Limited quantities (ADR) 5L
EAC : 2Z
Excepted quantities (ADR) : E1

Transport by sea

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a

passenger vessel.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

MFAG-No : 151

Air transport

DOT Quantity Limitations Passenger aircraft/rail : 60 L

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 220 L

CFR 175.75)

Civil Aeronautics Law : Toxic and infectious substances/Toxic substances

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

CHLOROFORM (13C, 99%) (31717-44-9)

Listed on SARA Section 302 (Specific toxic chemical listings) Listed on SARA Section 313 (Specific toxic chemical listings)

SARA Section 311/312 Hazard Classes Immediate (acute) health hazard Delayed (chronic) health hazard

15.2. International regulations

CANADA

CHLOROFORM (13C, 99%) (31717-44-9)

Listed on the Canadian DSL (Domestic Substances List) inventory.

15.2.1. National regulations

No additional information available

15.3. US State regulations

CHLOROFORM (13C, 99%)(31717-44-9)	
State or local regulations	U.S Massachusetts - Right To Know List U.S Pennsylvania - RTK (Right to Know) List U.S New Jersey - Right to Know Hazardous Substance List

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CHLOROFORM (13C, 99%)(31717-44-9)	
	WARNING! This product contains a chemical known by the state of California to cause cancer, birth defects or other reproductive harm.

SECTION 16: Other information

Other information

: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of R-, H- and EUH-phrases::

toxt of it; if and Eori pina	
Acute Tox. 3 (Inhalation)	Acute toxicity (inhalation) Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Carc. 2	Carcinogenicity Category 2
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Repr. 2	Reproductive toxicity Category 2
Skin Irrit. 2	skin corrosion/irritation Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
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
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
R22	Harmful if swallowed
R36/38	Irritating to eyes and skin
R40	Limited evidence of a carcinogenic effect
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation
R52	Harmful to aquatic organisms
R62	Possible risk of impaired fertility
R63	Possible risk of harm to the unborn child
R67	Vapors may cause drowsiness and dizziness
Т	Toxic
Xi	Irritant
Xn	Harmful

NFPA health hazard

 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

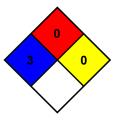
NFPA fire hazard

: 0 - Materials that will not burn.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions,

and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 0 Minimal Hazard
Physical : 0 Minimal Hazard

CIL Mixture SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

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