SAFETY DATA SHEET

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

Date of issue: 08/05/2014 Version 1.0

SECTION 1. Identification

Product identifier

Product number	CX1054
Product name	Chloroform For HPLC, Spectrophotometry and Gas Chromatography OmniSolv®
CAS-No.	67-66-3

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

Identified uses	Reagent for analysis

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

Acute toxicity, Category 4, Oral, H302
Acute toxicity, Category 3, Inhalation, H331
Skin irritation, Category 2, H315
Eye irritation, Category 2, H319
Carcinogenicity, Category 2, H351
Reproductive toxicity, Category 2, H361d
Specific target organ systemic toxicity - repeated exposure, Category 1, Liver, Kidney, H372

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

GHS-Labeling

Hazard pictograms

Signal Word
Danger

Hazard Statements
H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H351 Suspected of causing cancer.
H361d Suspected of damaging the unborn child.
H372 Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure.

Precautionary Statements
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.
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.

OSHA Hazards
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS and may deviate from the GHS information.

Other hazards
None known.

SECTION 3. Composition/information on ingredients

Formula	$CHCl_3$ (Hill)
Molar mass	119.38 g/mol

Hazardous ingredients
Chemical Name (Concentration)
CAS-No.
Chloroform (>= 90 % - <= 100 %)
67-66-3
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. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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

Eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist.

Ingestion
After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Call a physician immediately. Subsequently administer: activated charcoal (20 - 40 g in 10% slurry). In case of spontaneous vomiting: Risk of aspiration. Pulmonary failure possible. Call in physician.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
irritant effects, Cough, Shortness of breath, respiratory arrest, Dizziness, narcosis, agitation, spasms, inebriation, Nausea, Vomiting, Stomach/intestinal disorders, cardiovascular disorders, Headache, ataxia (impaired locomotor coordination)

Indication of any immediate medical attention and special treatment needed
Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

SECTION 5. Fire-fighting measures

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.

Special hazards arising from the substance or mixture
Not combustible.
Ambient fire may liberate hazardous vapors.
Fire may cause evolution of:
Hydrogen chloride gas, Phosgene

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.

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. 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.

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.

SECTION 7. Handling and storage

Precautions for safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Observe label precautions.

Conditions for safe storage, including any incompatibilities
Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at room temperature.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)
Ingredients

Basis	Value	Threshold limits	Remarks
Chloroform 67-66-3			
ACGIH	Time Weighted Average (TWA):	10 ppm	
NIOSH/GUIDE	Short Term Exposure Limit (STEL):	2 ppm 9.78 mg/m³	
OSHA_TRANS	Ceiling Limit Value:	50 ppm 240 mg/m³	
Z1A	Time Weighted Average (TWA):	2 ppm 9.78 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
Safety glasses

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:
protective clothing
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.

Respiratory protection
required when vapors/aerosols are generated.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	characteristic
Odor Threshold	No information available.
pH	No information available.
Melting point	-63 °C
Boiling point/boiling range	142 °F (61 °C) at 1,013 hPa
Flash point	Method: DIN 51755 Part 1 does not flash
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	not applicable
Upper explosion limit	not applicable
Vapor pressure	211 hPa at 68 °F (20 °C)
Relative vapor density	4.25
Density	1.47 g/cm³ at 68 °F (20 °C)
Relative density	No information available.

Water solubility	8 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 2 (25 °C) (experimental) (IUCLID) Bioaccumulation is not expected.
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	0.56 mPa.s at 68 °F (20 °C)
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Ignition temperature	not combustible

SECTION 10. Stability and reactivity

Reactivity
See below

Chemical stability
heat-sensitive
Sensitivity to light

Stabilizer
Pent-2-ene

Possibility of hazardous reactions
Risk of explosion with:

Ammonia, Amines, nitrogen oxides, bases, alkali amides, organic nitro compounds, Alcohols, alkali hydroxides, strong alkalis, Fluorine, peroxi compounds, Alkaline earth metals, Alkali metals, Powdered metals

Methanol, with, alcoholates

Iron, in powder form

various alloys, sensitive to shock

Methanol, with, Sodium hydroxide

magnesium, in powder form

Oxygen, with, alkali compounds

Aluminum, in powder form

Acetone, with, alkali compounds

Potassium, sensitive to shock

sodium, sensitive to shock

Violent reactions possible with:

phosphines, bis(dimethylamino)dimethyl tin, nonmetallic hydrogen compounds, Powdered metals, Light metals, Ketones

Conditions to avoid

no information available, Strong heating.

Incompatible materials

rubber, various plastics

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Eye contact, Skin contact

Target Organs

Liver
Kidneys
Heart
Eyes
Skin
Central nervous system

Acute oral toxicity

LD50 rat: 695 mg/kg (RTECS)

LDLO human: 2,514 mg/kg (RTECS)

Symptoms: Nausea, Vomiting, Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

absorption

Acute inhalation toxicity

Acute toxicity estimate: 0.5 mg/l

Symptoms: Cough, Shortness of breath, Possible damages:, mucosal irritations

absorption

Acute dermal toxicity

LD50 rabbit: > 3,980 mg/kg
(IUCLID)

absorption

Skin irritation
rabbit
Result: slight irritation
(IUCLID) (Regulation (EC) No 1272/2008, Annex VI)

Drying-out effect resulting in rough and chapped skin.
Causes skin irritation.

Eye irritation
rabbit
Result: slight irritation
(IUCLID) (Regulation (EC) No 1272/2008, Annex VI)

Causes serious eye irritation.

CMR effects
Carcinogenicity:
Suspected of causing cancer.

Teratogenicity:
Suspected of damaging the unborn child.

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
Target Organs: Liver, Kidney
Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	Group 2B: Possibly carcinogenic to humans	
	Chloroform	67-66-3
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	Anticipated carcinogen.	
	Chloroform	67-66-3
ACGIH	Confirmed animal carcinogen with unknown relevance to humans.	
	Chloroform	67-66-3

Further information
Systemic effects:
After absorption:
Dizziness, inebriation, agitation, spasms, narcosis, respiratory arrest
After long-term exposure to the chemical:

drop in blood pressure, Headache, ataxia (impaired locomotor coordination), Stomach/intestinal disorders, cardiovascular disorders
Damage to:
Liver, Kidney, Cardiac
Effect potentiated by: ethanol
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish
LC50 Lepomis macrochirus (Bluegill sunfish): 18 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): 79 mg/l; 48 h (IUCLID)

EC5 E.sulcatum: > 6,560 mg/l; 72 h (IUCLID) (maximum permissible toxic concentration)

Toxicity to algae
IC5 Scenedesmus quadricauda (Green algae): 1,100 mg/l; 8 d (IUCLID) (maximum permissible toxic concentration)

Toxicity to bacteria
EC5 Pseudomonas putida: 125 mg/l; 16 h (IUCLID) (maximum permissible toxic concentration)

EC50 activated sludge: 1,010 mg/l; 3 h
OECD Test Guideline 209

Persistence and degradability

Biodegradability
0 %; 14 d
OECD Test Guideline 301C
Not readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water
log Pow: 2 (25 °C)
(experimental)
(IUCLID) Bioaccumulation is not expected.

Mobility in soil

Distribution among environmental compartments
Adsorption/Soil
log Koc: 1.72
(experimental)
Mobile in soils

Other adverse effects

Henry constant
14084 Pa*m³/mol
Method: (experimental)
(IUCLID) Distribution preferentially in air.

Additional ecological information
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 1888
Proper shipping name	CHLOROFORM
Class	6.1
Packing group	III
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 1888
Proper shipping name	CHLOROFORM
Class	6.1
Packing group	III
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 1888
Proper shipping name	CHLOROFORM
Class	6.1
Packing group	III
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-A

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Harmful if swallowed.
Skin irritant
Eye irritant
Carcinogen
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312 Hazards

Acute Health Hazard
Chronic Health Hazard

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Ingredients

Chloroform	67-66-3	*99.978 %*

SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

Ingredients

Chloroform	67-66-3

Clean Water Act

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

Ingredients
Chloroform

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

Ingredients
Chloroform

DEA List I

Not listed

DEA List II

Not listed

US State Regulations

Massachusetts Right To Know

Ingredients
Chloroform

Pennsylvania Right To Know

Ingredients
Chloroform

New Jersey Right To Know

Ingredients
Chloroform

California Prop 65 Components

WARNING: this product contains a chemical known in the State of California to cause cancer.

Ingredients
Chloroform

California Prop 65 Components

WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Ingredients
Chloroform

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.

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

H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H351	Suspected of causing cancer.
H361d	Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

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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