

**Chloroform (BDH1109-4LG, BDH1109-19L, BDH1109-204L)****000000011712**

Version 1

Revision Date 06/19/2012

Print Date 06/20/2012

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Chloroform (BDH1109-4LG, BDH1109-19L, BDH1109-204L)

MSDS Number : 000000011712

Product Use Description : Solvent

Manufacturer : Honeywell
1953 South Harvey Street
Muskegon, MI 49442

Manufactured for : VWR International LLC
Radnor Corporate Center
Building One
Suite 200
100 Matsonford Road
Radnor PA 19087

For more information call : (Monday-Friday, 8:00am-5:00pm)
1-800-932-5000

In case of emergency call : (24 hours/day, 7 days/week)
1-800-424-9300 (USA Only)
For Transportation Emergencies:
1-800-424-9300 (CHEMTREC - Domestic)
1-613-966-6666 (CANUTEC - Canada)

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Form : liquid, clear

Color : colourless

Odor : sweet

Hazard Summary : May be harmful if swallowed. May be harmful if inhaled. Irritating to eyes and respiratory system. The product may be absorbed through the skin. May cause irritation of the gastrointestinal tract. May irritate skin. Repeated exposure may cause skin dryness or cracking. Contains material which may cause cancer based on animal data. Use of alcoholic beverages may enhance toxic effects.

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Potential Health Effects

- Skin** : May irritate skin.
The product may be absorbed through the skin.
Prolonged or repeated skin contact with liquid may cause defatting resulting in drying, redness and possible blistering.
May cause systemic poisoning with symptoms paralleling those of inhalation.
May cause systemic poisoning with symptoms paralleling those of ingestion.
- Eyes** : Irritating to eyes.
Causes itching, burning, redness and tearing.
- Ingestion** : Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
May cause systemic poisoning with symptoms paralleling those of inhalation.
Repeated or prolonged exposure to the substance can produce kidney damage.
Repeated or prolonged exposure to the substance can produce liver damage.
Use of alcoholic beverages may enhance toxic effects.
- Inhalation** : Irritating to respiratory system.
Causes headache, drowsiness or other effects to the central nervous system.
May cause cardiac arrhythmia.
Vapours may cause drowsiness and dizziness.
High concentration of vapours may induce unconsciousness.
Repeated or prolonged exposure to the substance can produce kidney damage.
Repeated or prolonged exposure to the substance can produce liver damage.
- Chronic Exposure** : Repeated and prolonged exposure to solvents may cause brain and nervous system damage.
May cause cardiac arrhythmia.
Repeated or prolonged exposure to the substance can produce kidney damage.
Repeated or prolonged exposure to the substance can produce liver damage.
Prolonged or repeated skin contact with liquid may cause defatting resulting in drying, redness and possible blistering.
Contains material which may cause cancer based on animal data.


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Use of alcoholic beverages may enhance toxic effects.

Aggravated Medical Condition : Eye disorders
 Skin disorders
 Kidney disorders
 Liver disorders
 Respiratory disorders
 Neurological disorders
 Heart disease

Target Organs : Liver
 Kidney
 Heart
 Eyes
 Skin
 Central nervous system

Carcinogenicity

NTP: Chloroform 67-66-3
 Reasonably Anticipated to be a Human Carcinogen.

IARC: Chloroform 67-66-3
 Group 2B: Possibly carcinogenic to humans

ACGIH: Chloroform 67-66-3
 A3: Confirmed animal carcinogen

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : CHCl₃

Chemical Name	CAS-No.	Concentration
Chloroform	67-66-3	100.00%

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present. Call a physician.

Skin contact : Wash off immediately with plenty of water for at least 15



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minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician.

Ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician.

Notes to physician

Treatment : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Foam
Cool closed containers exposed to fire with water spray.

Specific hazards during firefighting : The product is not flammable.
Exposure to decomposition products may be a hazard to health.
In case of fire hazardous decomposition products may be produced such as:
Gaseous hydrogen chloride (HCl).
Phosgene
Chlorine (Cl₂)
Carbon monoxide
Carbon dioxide (CO₂)

Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.

Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Wear personal protective equipment.
Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Isolate the affected area. Confine entry into the affected area to



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- those persons properly protected (see Section 8 of MSDS).
 Ensure adequate ventilation.
 Avoid accumulation of vapours in low areas.
 Remove all sources of ignition.
 Do not swallow.
 Avoid breathing vapors, mist or gas.
 Avoid contact with skin, eyes and clothing.
- Environmental precautions : Prevent further leakage or spillage if safe to do so.
 Do not let product enter drains.
 Discharge into the environment must be avoided.
 Do not flush into surface water or sanitary sewer system.
 Do not allow run-off from fire fighting to enter drains or water courses.
- Methods for cleaning up : Ventilate the area.
 Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
 Shovel into suitable container for disposal.
 Dispose of absorbed material in accordance with the regulations.

SECTION 7. HANDLING AND STORAGE

Handling

- Handling : Wear personal protective equipment.
 Use only in well-ventilated areas.
 Keep container tightly closed.
 Do not smoke.
 Do not swallow.
 Avoid breathing vapors, mist or gas.
 Avoid contact with skin, eyes and clothing.
- Advice on protection against fire and explosion : The product is not flammable.
 Normal measures for preventive fire protection.
 Keep product and empty container away from heat and sources of ignition.
 Fire or intense heat may cause violent rupture of packages.
 Container hazardous when empty.

Storage

- Requirements for storage areas and containers : Keep containers tightly closed in a dry, cool and well-ventilated place.
 Containers which are opened must be carefully resealed and



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kept upright to prevent leakage.
 Keep away from heat and sources of ignition.
 Keep away from direct sunlight.
 Protect from physical damage.
 Store away from incompatible substances.
 Container hazardous when empty.
 Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- | | | |
|--------------------------|---|--|
| Protective measures | : | Ensure that eyewash stations and safety showers are close to the workstation location. |
| Engineering measures | : | Use with local exhaust ventilation.
Prevent vapor buildup by providing adequate ventilation during and after use. |
| Eye protection | : | Do not wear contact lenses.
Wear as appropriate:
Safety glasses with side-shields
If splashes are likely to occur, wear:
Goggles or face shield, giving complete protection to eyes |
| Hand protection | : | Solvent-resistant gloves
Gloves must be inspected prior to use.
Replace when worn. |
| Skin and body protection | : | Wear as appropriate:
Solvent-resistant apron
Solvent-resistant gloves
If splashes are likely to occur, wear:
Protective suit |
| Respiratory protection | : | In case of insufficient ventilation, wear suitable respiratory equipment.
Wear a positive-pressure supplied-air respirator.
For rescue and maintenance work in storage tanks use self-contained breathing apparatus.
Use NIOSH approved respiratory protection. |
| Hygiene measures | : | When using, do not eat, drink or smoke.
Wash hands before breaks and immediately after handling the product.
Keep working clothes separately.
Remove and wash contaminated clothing before re-use. |



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Do not swallow.
 Avoid breathing vapors, mist or gas.
 Avoid contact with skin, eyes and clothing.
 This material has an established AIHA ERPG exposure limit.
 The current list of ERPG exposure limits can be found at
http://www.aiha.org/insideaiha/GuidelineDevelopment/ERPG/Documents/2011erpgweelhandbook_table-only.pdf.

Exposure Guidelines–

Components	CAS-No	Value	Control parameters	Update	Basis
Chloroform	67-66-3	TWA : time weighted average	(10 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values

		STEL : Short term exposure limit	9.78 mg/m3 (2 ppm)	2005	NIOSH/GUIDE: US. NIOSH: Pocket Guide to Chemical Hazards
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		Ceiling : Ceiling Limit Value:	240 mg/m3 (50 ppm)	02 2006	OSHA_TRANS: US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
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		TWA : time weighted average	9.78 mg/m3 (2 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid, clear
Colour	: colourless
Odour	: sweet
pH	: Note: not applicable
Melting point/freezing point	: -64 °C
Boiling point/boiling range	: 62 °C
Flash point	: Note: does not flash
Evaporation rate	: 0.6 Method: Compared to Ether (anhydrous).
Lower explosion limit	: Note: not applicable
Upper explosion limit	: Note: not applicable
Vapour pressure	: 212 hPa at 20 °C(68 °F)
Vapour density	: 4.12 Note: (Air = 1.0)
Density	: 1.49 g/cm ³ at 20 °C
Water solubility	: 8 g/l at 20 °C

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Ignition temperature : > 1,000 °C

Molecular Weight : 119.37 g/mol

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid : Heat, flames and sparks.
Protect from heat/overheating.
Keep away from direct sunlight.

Materials to avoid : Metals
Aluminium
Magnesium
Strong bases
Strong oxidizing agents
May attack many plastics, rubbers and coatings.

Hazardous decomposition products : Gaseous hydrogen chloride (HCl).
Phosgene
Chlorine (Cl₂)
Carbon monoxide
Carbon dioxide (CO₂)

Hazardous reactions : Hazardous polymerisation does not occur.
Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50: 908 mg/kg
Species: rat

Acute inhalation toxicity : LC50: 47.7 mg/l
Exposure time: 4 h
Species: rat

Acute dermal toxicity : LD50: 20 g/kg
Species: rabbit

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Skin irritation	: Species: rabbit Result: Mild skin irritation Exposure time: 24 h
Repeated dose toxicity	: Species: rat Application Route: Inhalation Note: (50 ppm; 7 hours/day, 5 days/week for 6 months) Causes damage to the following organs: liver, kidneys.
	: Species: rat, male Application Route: Oral gavage bioassay Note: Carcinogenicity (70 g/kg for 78 weeks) Kidney tumors
	: Species: mouse, both male and female Application Route: Oral gavage bioassay Note: Carcinogenicity (127 g/kg for 92 weeks) Liver tumors
	: Species: rat, male Application Route: Drinking Water Study Note: Carcinogenicity (160 mg/kg/d for 104 days) Kidney tumors
	: Species: rat Application Route: Inhalation Note: Embryotoxicity at maternally toxic concentrations.
	: Species: rat Application Route: Inhalation Note: Teratogenicity at maternally toxic concentrations.
Further information	: Note: Contains material which may cause cancer based on animal data.

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity effects**

Toxicity to fish	: static test LC50: 43.8 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout)
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	: static test LC50: 100 mg/l Exposure time: 96 h Species: Lepomis macrochirus (Bluegill sunfish)
Toxicity to daphnia and other aquatic invertebrates.	: static test LC50: 28.9 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea)
Toxicity to algae	: LC0: 185 mg/l Species: Microcystis aeruginosa (blue alge)
	: LC0: 1,110 mg/l Species: Scenedesmus quadricauda (Green algae)
Toxicity to bacteria	: LC0: 125 mg/l Species: Pseudomonas putida

Further information on ecology

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	: Observe all Federal, State, and Local Environmental regulations.
Contaminated packaging	: Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

DOT	UN/ID No.	: UN 1888
	Proper shipping name	: CHLOROFORM
	Class	6.1
	Packing group	III
	Hazard Labels	6.1
IATA	UN/ID No.	: UN 1888
	Description of the goods	: CHLOROFORM
	Class	: 6.1


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Packaging group	:	III
Hazard Labels	:	6.1
Packing instruction (cargo aircraft)	:	680
Packing instruction (passenger aircraft)	:	680
Packing instruction (passenger aircraft)	:	Y680

IMDG	UN/ID No.	:	UN 1888
	Description of the goods	:	CHLOROFORM
	Class	:	6.1
	Packaging group	:	III
	Hazard Labels	:	6.1
	EmS Number	:	F-A
	Marine pollutant	:	no

SECTION 15. REGULATORY INFORMATION
Inventories

US. Toxic Substances Control Act	:	On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act	:	On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	:	All components of this product are on the Canadian DSL list.
Japan. Kashin-Hou Law List	:	On the inventory, or in compliance with the inventory
Korea. Existing Chemicals Inventory (KECI)	:	On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	:	On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances	:	On the inventory, or in compliance with the inventory
New Zealand. Inventory of	:	On the inventory, or in compliance with the inventory



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Chemicals (NZIoC), as published by ERMA New Zealand

National regulatory information

- SARA 302 Components** : The following components are subject to reporting levels established by SARA Title III, Section 302:
: Chloroform 67-66-3
- SARA 313 Components** : The following components are subject to reporting levels established by SARA Title III, Section 313:
: Chloroform 67-66-3
- SARA 311/312 Hazards** : Acute Health Hazard
Chronic Health Hazard
- CERCLA Reportable Quantity** : 10 lbs
- California Prop. 65** : WARNING! This product contains a chemical known to the State of California to cause cancer.
Chloroform 67-66-3
- : WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
Chloroform 67-66-3
- Massachusetts RTK** : Chloroform 67-66-3
- New Jersey RTK** : Chloroform 67-66-3
- Pennsylvania RTK** : Chloroform 67-66-3



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WHMIS Classification : D1B: Toxic Material Causing Immediate and Serious Toxic Effects
 D2A: Very Toxic Material Causing Other Toxic Effects
 D2B: Toxic Material Causing Other Toxic Effects
 This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16. OTHER INFORMATION

	HMIS III	NFPA
Health hazard	: 2*	2
Flammability	: 0	0
Physical Hazard	: 0	
Instability	:	0

* - Chronic health hazard

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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Prepared by: Honeywell Performance Materials and Technologies Product Stewardship Group