

SAFETY DATA SHEET

Version 6.0
Revision Date 03/14/2018
Print Date 11/14/2018

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : HCH

Product Number : 36756

Brand : Sigma-Aldrich

CAS-No. : 608-73-1

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

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 Spruce Street
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765

Fax : +1 800 325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Oral (Category 3), H301

Acute toxicity, Dermal (Category 4), H312

Carcinogenicity (Category 2), H351

Effects on or via lactation, H362

Specific target organ toxicity - repeated exposure (Category 2), H373

Acute aquatic toxicity (Category 1), H400

Chronic aquatic toxicity (Category 1), H410

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)	
H301	Toxic if swallowed.
H312	Harmful in contact with skin.
H351	Suspected of causing cancer.
H362	May cause harm to breast-fed children.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
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/ vapours/ spray.
P263	Avoid contact during pregnancy/ while nursing.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
P302 + P352 + P312	IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Formula : $C_6H_6Cl_6$
Molecular weight : 290.83 g/mol

Hazardous components

Hazardous components		Classification	Concentration
Component			
Classification			
Concentration			
1α,2α,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane			
CAS-No.	319-86-8	Acute Tox. 3; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H312, H351, H410	>= 20 - < 30 %
EC-No.	206-272-9		
Index-No.	602-042-00-0		
(1α,2β,3α,4β,5α,6β)-1,2,3,4,5,6-Hexachlorocyclohexane			
CAS-No.	319-85-7	Acute Tox. 3; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H312, H351, H410	>= 20 - < 30 %
EC-No.	206-271-3		
Index-No.	602-042-00-0		
γ-1,2,3,4,5,6-Hexachlorocyclohexane			
CAS-No.	58-89-9	Acute Tox. 3; Acute Tox. 4; Carc. 2; Lact. ; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 1; H301, H312 + H332, H351, H362, H373, H410	>= 20 - < 30 %
EC-No.	200-401-2		
Index-No.	602-043-00-6		

(1α,2α,3β,4α,5β,6β)-1,2,3,4,5,6-Hexachlorocyclohexane			
CAS-No.	319-84-6	Acute Tox. 3; Acute Tox. 4;	>= 20 - < 30 %
EC-No.	206-270-8	Carc. 2; Aquatic Acute 1;	
Index-No.	602-042-00-0	Aquatic Chronic 1; H301, H312, H351, H410	

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

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

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

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

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

Carbon oxides, Hydrogen chloride gas

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

6.2 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.

6.3 Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Provide appropriate exhaust ventilation at places where dust is formed.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
γ-1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	TWA	0.500000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Central Nervous System impairment Liver damage Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	0.500000 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	0.500000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		TWA	0.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Liver damage Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	0.5 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential for dermal absorption		
		TWA	0.5 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		Skin designation		
		TWA	0.5 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		Skin notation		
		PEL	0.5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		

8.2 Exposure controls

Appropriate engineering controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance	Form: solid
b) Odour	No data available
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	Melting point/range: > 300 °C (> 572 °F)
f) Initial boiling point and boiling range	No data available
g) Flash point	Not applicable
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapour pressure	No data available
l) Vapour density	No data available
m) Relative density	No data available
n) Water solubility	insoluble
o) Partition coefficient: n-octanol/water	log Pow: 3.78
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

Other decomposition products - No data available

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: 2B - Group 2B: Possibly carcinogenic to humans (γ -1,2,3,4,5,6-Hexachlorocyclohexane)

1 - Group 1: Carcinogenic to humans (γ -1,2,3,4,5,6-Hexachlorocyclohexane)

IARC: 2B - Group 2B: Possibly carcinogenic to humans ((1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (γ -1,2,3,4,5,6-Hexachlorocyclohexane)

1 - Group 1: Carcinogenic to humans (γ -1,2,3,4,5,6-Hexachlorocyclohexane)

IARC: 2B - Group 2B: Possibly carcinogenic to humans ((1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)

NTP: RAHC - Reasonably anticipated to be a human carcinogenThe reference note has been added by TD based on the background information of the NTP. (γ -1,2,3,4,5,6-Hexachlorocyclohexane)

NTP: RAHC - Reasonably anticipated to be a human carcinogen ((1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)

NTP: RAHC - Reasonably anticipated to be a human carcinogenThe reference note has been added by TD based on the background information of the NTP. (γ -1,2,3,4,5,6-

Hexachlorocyclohexane)

NTP: RAHC - Reasonably anticipated to be a human carcinogen ((1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Reproductive system. - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

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

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

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

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 2811

Class: 6.1

Packing group: II

Proper shipping name: Toxic solids, organic, n.o.s. ((1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)
Reportable Quantity (RQ) : 4 lbs

Marine pollutant: no
Poison Inhalation Hazard: No

IMDG

UN number: 2811 Class: 6.1 Packing group: II EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. ((1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)
Marine pollutant : yes

IATA

UN number: 2811 Class: 6.1 Packing group: II
Proper shipping name: Toxic solid, organic, n.o.s. ((1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)

15. REGULATORY INFORMATION

SARA 302 Components

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

	CAS-No.	Revision Date
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2007-07-01

SARA 313 Components

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

	CAS-No.	Revision Date
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2007-07-01
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-86-8	
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-85-7	
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2007-07-01
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-86-8	
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-85-7	
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2007-07-01
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-86-8	
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-85-7	
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2007-07-01
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2007-07-01

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.

	CAS-No.	Revision Date
1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-86-8	
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-85-7	
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2009-02-01

(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2009-02-01
WARNING! This product contains a chemical known to the State of California to cause cancer.	CAS-No.	Revision Date
1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-86-8	
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-85-7	
γ -1,2,3,4,5,6-Hexachlorocyclohexane	58-89-9	2009-02-01
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6	2009-02-01

16. OTHER INFORMATION

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

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
H301	Toxic if swallowed.
H312	Harmful in contact with skin.
H312 + H332	Harmful in contact with skin or if inhaled
H351	Suspected of causing cancer.
H362	May cause harm to breast-fed children.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
Lact.	Effects on or via lactation
STOT RE	Specific target organ toxicity - repeated exposure

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

Further information

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Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956
Version: 6.0

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