

SAFETY DATA SHEET

according to the OSHA
Hazard Communication Standard

Version 6.12
Revision Date 07/14/2026
Print Date 07/15/2026

SECTION 1. 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

Restrictions on use : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

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

Telephone : +1 314 771-5765

Fax : +1 800 325-5052

1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-
527-3887 CHEMTREC (International) 24
Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards for the product as supplied

Acute toxicity (Oral) : Category 3

Acute toxicity (Dermal) : Category 4

Carcinogenicity : Category 2

Effects on or via lactation

Specific target organ toxicity - repeated exposure : Category 2

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : 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 statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust.
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.
Response:
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.

P302 + P352 + P312 IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/ doctor if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

CAS-No. : 608-73-1

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-86-8*	>= 20 - < 30	-
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-85-7*	>= 20 - < 30	-
Gammexene	58-89-9*	>= 20 - < 30	-
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6*	>= 20 - < 30	-

* Indicates that the identifier is a CAS No.

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Call in physician.

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

In case of eye contact : After eye contact: rinse out with plenty of water.

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Call in ophthalmologist.
Remove contact lenses.

- If swallowed : If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.
- Most important symptoms and effects, both acute and delayed : The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) and/or in section 11
- Protection of first-aiders : For personal protection see section 8.
- Notes to physician : No data available

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Water
Foam
Carbon dioxide (CO₂)
Dry powder
- Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.
- Specific hazards during fire fighting : Combustible.
- Development of hazardous combustion gases or vapours possible in the event of fire.
- Hazardous combustion products : Carbon oxides
Hydrogen chloride gas
- Specific extinguishing methods : No data available
- Further information : Suppress (knock down) gases/vapours/mists with a water spray jet.
Prevent fire extinguishing water from contaminating surface water or the ground water system.

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.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Advice for non-emergency personnel:
Avoid inhalation of dusts.
Avoid substance contact.
Ensure adequate ventilation.
Evacuate the danger area, observe emergency procedures, consult an expert.
Advice for emergency responders:
Wear appropriate personal protective equipment, as indicated in 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. Dispose of properly. Clean up affected area.
Avoid generation of dusts.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2 GHS label elements

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

Further information on storage conditions : Tightly closed.
Dry.
Keep in a well-ventilated place.
Keep locked up or in an area accessible only to qualified or authorised persons.

Storage class : 6.1A, Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

Recommended storage temperature : Recommended storage temperature see product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Gammmaxene	58-89-9	TWA	0.5 mg/m ³	ACGIH
		TWA	0.5 mg/m ³	NIOSH REL
		TWA	0.5 mg/m ³	OSHA Z-1

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P3

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Full contact
Manufacturer : KCL 741 Dermatril® L

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Splash contact
Manufacturer : KCL 741 Dermatril® L

Remarks : Handle with impervious gloves.
This recommendation applies only to the product

stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

- Eye protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Safety glasses
- Skin and body protection : protective clothing
- Hygiene measures : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : solid
- Colour : No data available
- Odour : No data available
- Odour Threshold : No data available
pH : No data available
- Melting point/ range : > 572 °F / > 300 °C
- Boiling point/boiling range : No data available
- Flash point : Not applicable
- Evaporation rate : No data available
- Flammability (solid, gas) : No data available
- Flammability (liquids) : No data available
- Burning rate : No data available
- Upper explosion limit /
Upper flammability limit : No data available
- Lower explosion limit /
Lower flammability limit : No data available

Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Density	: No data available
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: log Pow: 3.78
Autoignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available
Flow time	: No data available
Explosive properties	: Not classified as explosive.
Oxidizing properties	: none
Molecular weight	: 290.83 g/mol
Particle characteristics	
Particle size	: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
Chemical stability	: The product is chemically stable under standard ambient conditions (room temperature) .
Possibility of hazardous reactions	: No data available
Conditions to avoid	: no information available
Incompatible materials	: Strong oxidizing agents

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Hazardous decomposition : In the event of fire: see section 5 products

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Mixture

Acute toxicity

Acute toxicity estimate Oral - 108.1 mg/kg
(Calculation method)

Acute toxicity estimate Inhalation - 4 h - 6.24 mg/l - dust/mist(Calculation method)

Acute toxicity estimate Dermal - 1,179 mg/kg
(Calculation method)

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Evidence of a carcinogenic effect.

IARC: 1 - Group 1: Carcinogenic to humans (Gammaxene)

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

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

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

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 on OSHA's list of regulated carcinogens.

Reproductive toxicity

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No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

Mixture may cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

No data available

11.2 Additional Information

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

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

Reproductive system. - Irregularities - Based on Human Evidence

Components

1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane

Acute toxicity

LD50 Oral - Rat - 1,000 mg/kg

Remarks: (RTECS)

Inhalation: No data available

Acute toxicity estimate Dermal - Expert judgement - 1,100.1 mg/kg

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: 1,2,3,4,5,6-hexachlorocyclohexanes with the exception of gamma-HCH

Acute toxicity estimate Dermal - 1,100.1 mg/kg

(Expert judgement)

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Suspected of causing cancer.

Reproductive toxicity

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

(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane**Acute toxicity**

Oral: No data available

Inhalation: No data available

Dermal: No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Limited evidence of carcinogenicity in animal studies

Reproductive toxicity

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

Gammmaxene**Acute toxicity**

LD50 Oral - Rat - 88.0 mg/kg

Remarks: (IUCLID)

LC50 Inhalation - Rat - 4 h - 1,560 mg/m³ - dust/mist

Remarks: (Lit.)

Acute toxicity estimate Dermal - 1,500.1 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation

(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

Remarks: (IUCLID)

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

NTP:

The reference note has been added by TD based on the background information of the NTP.

Reproductive toxicity

Studies indicating a hazard to babies during the lactation period

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Aspiration hazard

No data available

(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane**Acute toxicity**

LD50 Oral - Rat - 177.0 mg/kg

Remarks: (RTECS)

Inhalation: No data available

Acute toxicity estimate Dermal - 1,100 mg/kg

(Expert judgement)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Suspected of causing cancer.

Reproductive toxicity

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

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.02 mg/l

Exposure time: 96 h

Remarks: (ECOTOX Database)

(in analogy to similar products)

The value is given in analogy to the following substances: 1,2,3,4,5,6-hexachlorocyclohexanes with the exception of gamma-HCH

Toxicity to daphnia and : EC50 (Daphnia pulex (Water flea)): 0.68 mg/l

other aquatic
invertebrates

Exposure time: 48 h

Remarks: (ECOTOX Database)

(in analogy to similar products)

The value is given in analogy to the following substances: 1,2,3,4,5,6-hexachlorocyclohexanes with the exception of gamma-HCH

M-Factor (Acute aquatic : 10
toxicity)

M-Factor (Chronic aquatic : 10
toxicity)

(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:

Toxicity to fish : LC50 : 0.1 mg/l
Exposure time: 96 h

M-Factor (Acute aquatic : 10
toxicity)

Gammarene:

M-Factor (Acute aquatic toxicity) : 10

M-Factor (Chronic aquatic toxicity) : 10

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.20 - 1.70 mg/l
Exposure time: 48 h
Remarks: (ECOTOX Database)

M-Factor (Acute aquatic toxicity) : 1

M-Factor (Chronic aquatic toxicity) : 1

Persistence and degradability**Components:****1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:**

Biodegradability : Remarks: No data available

(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:

Biodegradability : Result: According to the results of tests of biodegradability this product is not readily biodegradable.

Bioaccumulative potential**Components:****1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:**

Bioaccumulation : Species: other fish
Bioconcentration factor (BCF): 326
Exposure time: 33 d
Concentration: 0.955 mg/l

(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 500
Exposure time: 35 d

Concentration: 0.05 mg/l

Partition coefficient: n-octanol/water : log Pow: 3.78
Remarks: Bioaccumulation is not expected.

Gammaxene:

Bioaccumulation : Species: Pimephales promelas (fathead minnow)
Bioconcentration factor (BCF): 674
Exposure time: 304 d
Concentration: 0.0091 mg/l

Partition coefficient: n-octanol/water : Pow: 3.5 (72 °F / 22 °C)
Remarks: Bioaccumulation is not expected.

(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane:

Partition coefficient: n-octanol/water : log Pow: 3.80
Remarks: Bioaccumulation is not expected.

Mobility in soil

No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Endocrine disrupting properties

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

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UN/ID No. : UN 2811
 Proper shipping name : Toxic solid, organic, n.o.s.
 (1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)
 Class : 6.1
 Packing group : III
 Labels : Division 6.1 - Toxic substances
 Packing instruction (cargo aircraft) : 677
 Packing instruction (passenger aircraft) : 670

IMDG-Code

UN number : UN 2811
 Proper shipping name : TOXIC SOLID, ORGANIC, N.O.S.
 (1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)
 Class : 6.1
 Packing group : III
 Labels : 6.1
 EmS Code : F-A, S-A
 Marine pollutant : yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations

49 CFR

UN/ID/NA number : UN 2811
 Proper shipping name : Toxic solids, organic, n.o.s.
 (1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane)
 Class : 6.1
 Packing group : III
 Labels : Division 6.1 - Toxic substances
 ERG Code : 154
 Marine pollutant : yes
 Poison Inhalation Hazard : No

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
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1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexane	319-86-8	1	4
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexane	319-85-7	1	4
Gammaxene	58-89-9	1	4
Gammaxene	58-89-9	1	1 (D013)

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Gammaxene	58-89-9	1	4

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Components	CAS-No.	Component TPQ (lbs)
Gammaxene	58-89-9	10000
Gammaxene	58-89-9	1000*

*: Solid in the molten or powdered form (particles < 100 microns), in solution, or meeting the NFPA reactivity criteria

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:

Gammaxene	58-89-9	>= 20 - < 30 %
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexane	319-84-6	>= 20 - < 30 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexane	319-86-8	>= 20 - < 30 %
(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexane	319-85-7	>= 20 - < 30 %
Gammaxene	58-89-9	>= 20 - < 30 %

(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-84-6	>= 20 - < 30 %
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This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

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

Gammaxene	58-89-9	>= 20 - < 30 %
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This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-86-8	>= 20 - < 30 %
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(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-85-7	>= 20 - < 30 %
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Gammaxene	58-89-9	>= 20 - < 30 %
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(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-84-6	>= 20 - < 30 %
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This product contains the following priority pollutants related to the U.S. Clean Water Act:

1 α ,2 α ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-86-8	>= 20 - < 30 %
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(1 α ,2 β ,3 α ,4 β ,5 α ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-85-7	>= 20 - < 30 %
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(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)- 1,2,3,4,5,6- Hexachlorocyclohexan e	319-84-6	>= 20 - < 30 %
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US State Regulations

Massachusetts Right To Know

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
Gammaxene	58-89-9
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-	319-84-6

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Hexachlorocyclohexane

Pennsylvania Right To Know

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
Gammaxene	58-89-9
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane	319-84-6

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including 1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane, (1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane, Gammaxene, (1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov. **International Regulations**

Rotterdam Convention (Prior Informed Consent) : 1 α ,2 α ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane
Gammaxene

Stockholm Convention (Persistent Organic Pollutants) : (1 α ,2 β ,3 α ,4 β ,5 α ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane
Gammaxene
(1 α ,2 α ,3 β ,4 α ,5 β ,6 β)-1,2,3,4,5,6-Hexachlorocyclohexane

The components of this product are reported in the following inventories:

US TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

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The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the US and Canada

**MILLIPORE
SIGMA**

ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	: USA. NIOSH Recommended Exposure Limits
OSHA Z-1	: USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	: 8-hour, time-weighted average
NIOSH REL / TWA	: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
OSHA Z-1 / TWA	: 8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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