

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

1 Identification

- **Product identifier**
- **Product Name:** Mirex
- **Part Number:** S-2635
- **Application of the substance / the mixture** Certified Reference Material
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
SPEX CertiPrep, LLC.
203 Norcross Ave, Metuchen,
NJ 08840 USA
- **Information department:** product safety department
- **Emergency telephone number:**
Emergency Phone Number (24 hours)
CHEMTREC (800-424-9300)
Outside US: 703-527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer.

Repr. 2 H361 Suspected of damaging fertility or the unborn child.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.

Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

STOT SE 3 H336 May cause drowsiness or dizziness.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS02



GHS07



GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**

n-hexane

toluene

- **Hazard statements**

H225 Highly flammable liquid and vapor.

H315 Causes skin irritation.

H351 Suspected of causing cancer.

H361 Suspected of damaging fertility or the unborn child.

H336 May cause drowsiness or dizziness.

H373 May cause damage to organs through prolonged or repeated exposure.

H304 May be fatal if swallowed and enters airways.

- **Precautionary statements**

If swallowed: Immediately call a poison center/doctor.

Specific treatment (see on this label).

Do NOT induce vomiting.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

Product Name: Mirex

(Contd. of page 1)

Take off contaminated clothing and wash it before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 1
Fire = 3
Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**



Health = 1
Fire = 3
Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

110-54-3	n-hexane	49.95%
108-88-3	toluene	49.95%
2385-85-5	dodecachloropentacyclo[5.2.1.0 ² .6.0 ³ .9.0 ³ .8]decane	0.1%

4 First-aid measures

- **Description of first aid measures**
- **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Immediately rinse with water.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** Do not give anything to eat or drink - Do not induce vomiting
- **Information for Doctor:**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed** No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Special hazards arising from the substance or mixture** During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

(Contd. on page 3)

US

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

Product Name: Mirex

(Contd. of page 2)

- **Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

- **Protective Action Criteria for Chemicals**

- **PAC-1:**

110-54-3	n-hexane	260 ppm
108-88-3	toluene	67 ppm
2385-85-5	dodecachloropentacyclo[5.2.1.0 ² ,6.0 ³ ,9.0 ³ ,8]decane	6.3 mg/m ³

- **PAC-2:**

110-54-3	n-hexane	2900* ppm
108-88-3	toluene	560 ppm
2385-85-5	dodecachloropentacyclo[5.2.1.0 ² ,6.0 ³ ,9.0 ³ ,8]decane	69 mg/m ³

- **PAC-3:**

110-54-3	n-hexane	8600** ppm
108-88-3	toluene	3700* ppm
2385-85-5	dodecachloropentacyclo[5.2.1.0 ² ,6.0 ³ ,9.0 ³ ,8]decane	410 mg/m ³

7 Handling and storage

- **Handling:**

- **Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.

Open and handle receptacle with care.

Prevent formation of aerosols.

- **Information about protection against explosions and fires:**

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Keep respiratory protective device available.

- **Conditions for safe storage, including any incompatibilities**

- **Storage:**

- **Requirements to be met by storerooms and receptacles:** Store in a cool location.

- **Information about storage in one common storage facility:** Not required.

- **Further information about storage conditions:**

Keep receptacle tightly sealed.

Store in cool, dry conditions in well sealed receptacles.

- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the remaining constituent has no known exposure limits.

110-54-3 n-hexane

PEL Long-term value: 1800 mg/m³, 500 ppm

REL Long-term value: 180 mg/m³, 50 ppm

TLV Long-term value: 176 mg/m³, 50 ppm
Skin; BEI

108-88-3 toluene

PEL Long-term value: 200 ppm
Ceiling limit value: 300; 500* ppm
*10-min peak per 8-hr shift

REL Short-term value: 560 mg/m³, 150 ppm
Long-term value: 375 mg/m³, 100 ppm

TLV Long-term value: 75 mg/m³, 20 ppm
BEI

(Contd. on page 4)

Product Name: Mirex

(Contd. of page 3)

· **Ingredients with biological limit values:****110-54-3 n-hexane**

BEI 0.4 mg/L
 Medium: urine
 Time: end of shift at end of workweek
 Parameter: 2.5-Hexanedione without hydrolysis

108-88-3 toluene

BEI 0.02 mg/L
 Medium: blood
 Time: prior to last shift of workweek
 Parameter: Toluene

0.03 mg/L
 Medium: urine
 Time: end of shift
 Parameter: Toluene

0.3 mg/g creatinine
 Medium: urine
 Time: end of shift
 Parameter: o-Cresol with hydrolysis (background)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**· **Personal protective equipment:**· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.
 Immediately remove all soiled and contaminated clothing.
 Wash hands before breaks and at the end of work.
 Store protective clothing separately.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

Tightly sealed goggles

9 Physical and chemical properties· **Information on basic physical and chemical properties**· **General Information**· **Appearance:**

Form: Liquid
Color: According to product specification

· **Odor:** Characteristic

· **Odour Threshold:** Not applicable.

· **pH-value:** Not applicable.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

Product Name: Mirex

(Contd. of page 4)

· Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	69 °C (156.2 °F)
· Flash point:	< 0 °C (<32 °F)
· Flammability (solid, gaseous):	Not applicable.
· Ignition temperature:	240 °C (464 °F)
· Decomposition temperature:	Not applicable.
· Auto igniting:	Product is not selfigniting.
· Danger of explosion:	Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· Explosion limits:	
Lower:	1.2 Vol %
Upper:	7.4 Vol %
· Vapor pressure at 20 °C (68 °F):	160 hPa (120 mm Hg)
· Density at 20 °C (68 °F)	0.78921 g/cm ³ (6.58596 lbs/gal)
· Relative density	Not applicable.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with Water:	Not miscible or difficult to mix.
· Partition coefficient (n-octanol/water):	Not applicable.
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· Solvent content:	
Organic solvents:	99.9 %
VOC content:	99.90 %
Solids content:	0.1 %
· Other information	No further relevant information available.

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

108-88-3 toluene

Oral	LD50	5,000 mg/kg (rat)
Dermal	LD50	12,124 mg/kg (rabbit)
Inhalative	LC50/4 h	5,320 mg/l (mouse)

- **Primary irritant effect:**
 - **on the skin:** Irritant to skin and mucous membranes.
 - **on the eye:** No irritating effect.
 - **Sensitization:** No sensitizing effects known.
 - **Additional toxicological information:**
- The product shows the following dangers according to internally approved calculation methods for preparations:
- Irritant
Product is suspected to cause damage to fertility.
Product is suspected to cause birth defects.

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

Product Name: Mirex

(Contd. of page 5)

· Carcinogenic categories

· IARC (International Agency for Research on Cancer)

108-88-3	toluene	3
2385-85-5	dodecachloropentacyclo[5.2.1.0 ² ,6.0 ³ ,9.0 ⁴ ,8]decane	2B

· NTP (National Toxicology Program)

2385-85-5	dodecachloropentacyclo[5.2.1.0 ² ,6.0 ³ ,9.0 ⁴ ,8]decane	R
-----------	---	---

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.	
------------------------------------	--

12 Ecological information

· Toxicity

· Aquatic toxicity: No further relevant information available.

· Persistence and degradability No further relevant information available.

· Behavior in environmental systems:

· Bioaccumulative potential No further relevant information available.

· Mobility in soil No further relevant information available.

· Additional ecological information:

· General notes:

Water hazard class 2 (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

· Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

· Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods

· Recommendation: Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· Uncleaned packagings:

· Recommendation: Disposal must be made according to official regulations.

14 Transport information

· UN-Number

· DOT, ADR, IMDG, IATA

UN1993

· UN proper shipping name

· DOT

· ADR

Flammable liquids, n.o.s. (Hexanes, Toluene)

1993 FLAMMABLE LIQUID, N.O.S. (HEXANES, TOLUENE), ENVIRONMENTALLY HAZARDOUS

· IMDG

FLAMMABLE LIQUID, N.O.S. (HEXANES, TOLUENE), MARINE POLLUTANT

· IATA

FLAMMABLE LIQUID, N.O.S. (HEXANES, TOLUENE)

· Transport hazard class(es)

· DOT, IATA



· Class

3 Flammable liquids

· Label

3

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

Product Name: Mirex

(Contd. of page 6)

· ADR, IMDG



· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, ADR, IMDG, IATA	II
· Environmental hazards:	Product contains environmentally hazardous substances: n-hexane
· Marine pollutant:	Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)
· Special precautions for user	Warning: Flammable liquids
· Danger code (Kemler):	33
· EMS Number:	F-E,S-E
· Stowage Category	B
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR	
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· IMDG	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· UN "Model Regulation":	UN 1993 FLAMMABLE LIQUID, N.O.S. (HEXANES, TOLUENE), 3, II, ENVIRONMENTALLY HAZARDOUS

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture

· Sara

· Section 313 (Specific toxic chemical listings):

110-54-3 n-hexane

108-88-3 toluene

· TSCA (Toxic Substances Control Act):

110-54-3 n-hexane

108-88-3 toluene

· TSCA new (21st Century Act): (Substances not listed)

2385-85-5 dodecachloropentacyclo[5.2.1.0²,6.0³,9.0⁵,8]decane

· Proposition 65

· Chemicals known to cause cancer:

2385-85-5 dodecachloropentacyclo[5.2.1.0²,6.0³,9.0⁵,8]decane

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for males:

110-54-3 n-hexane

· Chemicals known to cause developmental toxicity:

108-88-3 toluene

· Carcinogenic categories

· EPA (Environmental Protection Agency)

110-54-3 n-hexane

II

108-88-3 toluene

II

(Contd. on page 8)




Safety Data Sheet
acc. to OSHA HCS

Printing date 03/20/2019

Reviewed on 03/20/2019

Product Name: Mirex

(Contd. of page 7)

· TLV (Threshold Limit Value established by ACGIH)	
108-88-3	toluene
· NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed.	
· GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).	
· Hazard pictograms	
	
GHS02	GHS07
	
GHS08	
· Signal word Danger	
· Hazard-determining components of labeling:	
n-hexane	
toluene	
· Hazard statements	
H225 Highly flammable liquid and vapor.	
H315 Causes skin irritation.	
H351 Suspected of causing cancer.	
H361 Suspected of damaging fertility or the unborn child.	
H336 May cause drowsiness or dizziness.	
H373 May cause damage to organs through prolonged or repeated exposure.	
H304 May be fatal if swallowed and enters airways.	
· Precautionary statements	
If swallowed: Immediately call a poison center/doctor.	
Specific treatment (see on this label).	
Do NOT induce vomiting.	
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.	
Take off contaminated clothing and wash it before reuse.	
Store locked up.	
Dispose of contents/container in accordance with local/regional/national/international regulations.	
· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.	

A4



GHS02

GHS07

GHS08

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:** product safety department

- **Contact:**

SPEX CertiPrep, LLC.

1-732-549-7144

- **Date of preparation / last revision** 03/20/2019 / -

- **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEL: Biological Exposure Limit

Flam. Liq. 2: Flammable liquids – Category 2

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Carc. 2: Carcinogenicity – Category 2

Repr. 2: Reproductive toxicity – Category 2

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

Asp. Tox. 1: Aspiration hazard – Category 1