



MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 14/04/2015

Revision date:

Version: 1.0

ES-5401

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixtures
Product name : MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE
Product code : ES-5401

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

1.2.1. Relevant identified uses

Main use category : Professional use
Industrial/Professional use spec : For professional use only.
Industrial.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000
cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)
International: 1-703-741-5970 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2	H225
Acute Tox. 4 (Inhalation)	H332
Skin Irrit. 2	H315
Eye Irrit. 2	H319
Carc. 2	H351
Repr. 2	H361
STOT SE 3	H336
STOT RE 2	H373
Asp. Tox. 1	H304
Aquatic Chronic 3	H412

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

Carc.Cat.3; R40
Repr.Cat.3; R62
Repr.Cat.3; R63
F; R11
Xn; R20
Xn; R65
Xi; R36/38

Full text of R-phrases: see section 16

Classification (GHS-US)

Flam. Liq. 2	H225
Acute Tox. 4 (Inhalation)	H332
Skin Irrit. 2	H315

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Eye Irrit. 2A	H319
Carc. 2	H351
Repr. 2	H361
STOT SE 3	H336
STOT RE 2	H373
Asp. Tox. 1	H304
Aquatic Acute 2	H401
Aquatic Chronic 3	H412

Adverse physicochemical, human health and environmental effects

Bladder, Liver, Kidney, Brain.

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS02

GHS08

GHS07

Signal word (CLP)

: Danger

Hazardous ingredients

: TOLUENE UNLABELED

Hazard statements (CLP)

: H225 - Highly flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H336 - May cause drowsiness or dizziness
H351 - Suspected of causing cancer
H361 - Suspected of damaging fertility. Suspected of damaging the unborn child
H373 - May cause damage to organs (liver, kidneys, brain, urinary organs) through prolonged or repeated exposure
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (CLP)

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P260 - Do not breathe dust, fume, gas, mist, spray, vapors
P264 - Wash Both hands thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P273 - Avoid release to the environment

GHS-US labeling

Hazard pictograms (GHS-US)



GHS02

GHS08

GHS07

Signal word (GHS-US)

: Danger

Hazard statements (GHS-US)

: H225 - Highly flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H336 - May cause drowsiness or dizziness
H351 - Suspected of causing cancer (Dermal, Inhalation, oral)
H361 - (Dermal, Inhalation, oral)
H373 - May cause damage to organs (liver, kidneys, brain, urinary bladder) through prolonged or repeated exposure (Dermal, Inhalation, oral)
H401 - Toxic to aquatic life
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (GHS-US)

: P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood

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P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P260 - Do not breathe dust, fume, gas, mist, spray, vapors
P261 - Avoid breathing dust, fume, gas, mist, spray, vapors
P264 - Wash Both hands thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P273 - Avoid release to the environment
P280 - Wear protective clothing, protective gloves
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
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+P313 - IF exposed or concerned: Get medical advice/attention
P312 - Call a POISON CENTER/doctor/physician if you feel unwell
P314 - Get medical advice and attention if you feel unwell
P321 - Specific treatment (see Hazard pictograms (CLP) on this label)
P331 - If swallowed, do NOT induce vomiting
P332+P313 - If skin irritation occurs: Get medical advice/attention
P337+P313 - If eye irritation persists: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse
P370+P378 - In case of fire: Use Alcohol resistant foam., Carbon dioxide., Dry chemical., Water spray for extinction
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P403+P235 - Store in a well-ventilated place. Keep cool
P405 - Store locked up
P501 - Dispose of contents/container to Comply with applicable regulations.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Directive 67/548/EEC
TOLUENE UNLABELED	(CAS No) 108-88-3 (EC no) 203-625-9 (EC index no) 601-021-00-3	99.652	Repr.Cat.3; R62 Repr.Cat.3; R63 F; R11 Xi; R36/38 Carc.Cat.3; R40 Xn; R20 R67 Xn; R65
CHLOROBENZENE (13C6, 99%)	(CAS No) 108-90-7 (Unlabeled) (EC no) 203-628-5 (EC index no) 602-033-00-1	0.058	Xn; R20/22 N; R51/53 R10
1,4-DICHLOROBENZENE (13C6, 99%)	(CAS No) 201595-59-7 (EC no) 203-400-5 (EC index no) 602-035-00-2	0.058	Carc.Cat.1; R45 Carc.Cat.3; R40 Xn; R22 Xi; R36 N; R50/53
1,2,3-TRICHLOROBENZENE (13C6, 99%)	(CAS No) 87-61-6 (Unlabeled) (EC no) 201-757-1	0.058	Xn; R22 Xi; R36/37/38 N; R51/53
1,2,3,4-TETRACHLOROBENZENE (13C6, 99%)	(CAS No) 634-66-2 (Unlabeled)	0.058	Xn; R22 N; R50/53
PENTACHLOROBENZENE (13C6, 99%)	(CAS No) 608-93-5 (Unlabeled) (EC no) 210-172-0 (EC index no) 602-074-00-5	0.058	F; R11 Xn; R22 N; R51/53

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Name	Product identifier	%	Classification according to Directive 67/548/EEC
HEXACHLOROBENZENE (13C6, 99%)	(CAS No) 93952-14-8 (EC no) 204-273-9 (Unlabeled) (EC index no) 602-065-00-6	0.058	Xn; R20 N; R51/53 R10

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
TOLUENE UNLABELED	(CAS No) 108-88-3 (EC no) 203-625-9 (EC index no) 601-021-00-3	99.652	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 Repr. 2, H361d STOT SE 3, H336 STOT SE 2, H371 STOT RE 2, H373 Asp. Tox. 1, H304
CHLOROBENZENE (13C6, 99%)	(CAS No) 108-90-7 (Unlabeled) (EC no) 203-628-5 (EC index no) 602-033-00-1	0.058	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Aquatic Chronic 2, H411
1,4-DICHLOROBENZENE (13C6, 99%)	(CAS No) 201595-59-7 (EC no) 203-400-5 (EC index no) 602-035-00-2	0.058	Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319 Carc. 2, H351 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
1,2,3-TRICHLOROBENZENE (13C6, 99%)	(CAS No) 87-61-6 (Unlabeled) (EC no) 201-757-1	0.058	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 2, H411
1,2,3,4-TETRACHLOROBENZENE (13C6, 99%)	(CAS No) 634-66-2 (Unlabeled)	0.058	Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
PENTACHLOROBENZENE (13C6, 99%)	(CAS No) 608-93-5 (Unlabeled) (EC no) 210-172-0 (EC index no) 602-074-00-5	0.058	Flam. Sol. 1, H228 Acute Tox. 4 (Oral), H302 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
HEXACHLOROBENZENE (13C6, 99%)	(CAS No) 93952-14-8 (EC no) 204-273-9 (Unlabeled) (EC index no) 602-065-00-6	0.058	Carc. 1B, H350 STOT SE 1, H370 Aquatic Acute 1, H400 (M=100) Aquatic Chronic 1, H410

Name	Product identifier	%	Classification (GHS-US)
TOLUENE UNLABELED	(CAS No) 108-88-3	99.652	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Carc. 2, H351 Repr. 2, H361 STOT SE 3, H336 STOT SE 2, H371 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 2, H401

Full text of R-, H- and EUH-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell.
First-aid measures after skin contact	: Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Gently wash with plenty of soap and water. Get medical advice/attention. Specific treatment (see Hazard pictograms (CLP) on this label).
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Immediately flush eyes thoroughly with water for at least 15 minutes. Get medical advice/attention.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

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4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries	: Causes damage to organs (kidneys, liver, brain, urinary bladder) (Inhalation, dermal, oral). Suspected of damaging fertility.
Symptoms/injuries after inhalation	: May cause cancer by inhalation. May cause drowsiness or dizziness.
Symptoms/injuries after skin contact	: Causes skin irritation.
Symptoms/injuries after eye contact	: Causes serious eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

suitable extinguishing media	: Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Highly flammable liquid and vapor.
Explosion hazard	: May form flammable/explosive vapor-air mixture.

5.3. Advice for firefighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid (reject) fire-fighting water to enter environment.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.
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6.1.1. For non-emergency personnel

Emergency procedures	: Evacuate unnecessary personnel.
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6.1.2. For emergency responders

Protective equipment	: Avoid breathing dust, mist or spray.
Emergency procedures	: Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.
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6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	: Handle empty containers with care because residual vapors are flammable.
Precautions for safe handling	: Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No naked lights. No smoking. Use only non-sparking tools. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Avoid breathing dust, mist or spray.
Hygiene measures	: Wash Both hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical equipment.
Storage conditions	: Store at room temperature away from light and moisture.
Incompatible products	: Strong bases. strong acids.
Incompatible materials	: Sources of ignition. Direct sunlight. Heat sources.

7.3. Specific end use(s)

No additional information available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

CHLOROBENZENE (13C6, 99%) (108-90-7 (Unlabeled))		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	10.0000000000 ppm Liver damage. Confirmed animal carcinogen with unknown relevance to humans.
USA OSHA	OSHA PEL (TWA) (ppm)	75.0000000000 ppm
1,4-DICHLOROBENZENE (13C6, 99%) (201595-59-7)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	10.0000000000 ppm Eye irritation. Kidney damage. Confirmed animal carcinogen.
USA OSHA	OSHA PEL (TWA) (ppm)	75.0000000000 ppm
USA OSHA	OSHA PEL (STEL) (ppm)	110.0000000000 ppm
HEXACHLOROBENZENE (13C6, 99%) (93952-14-8)		
Italy - Portugal - USA ACGIH	ACGIH TWA (mg/m ³)	0.0000000000 mg/m ³ Central Nervous System impairment. Porphyrin effects. Skin damage.
TOLUENE UNLABELED (108-88-3)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	20.0000000000 ppm Visual impairment, Female reproductive, Pregnancy loss
USA OSHA	OSHA PEL (TWA) (ppm)	100.0000000000 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (STEL) (ppm)	150.0000000000 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure. Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



Hand protection : Wear protective gloves.
Eye protection : Chemical goggles or safety glasses.
Skin and body protection : Wear suitable protective clothing.
Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended.
Other information : When using, do not eat, drink or smoke.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

The properties listed below are for the solvent, the main component of this mixture.

Physical state : Liquid
Appearance : Liquid.
Molecular mass : 92.14 g/mol
Color : Colorless.
Odor : characteristic.
Odor threshold : No data available
pH : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : -93 °C (-135 °F)
Freezing point : No data available
Boiling point : 110 - 111 °C (230 - 232 °F)
Flash point : 4.0 °C (39.2 °F) - closed cup
Self ignition temperature : 535 °C (995 °F)
Decomposition temperature : No data available
Flammability (solid, gas) : Highly flammable liquid and vapor
Vapor pressure : 29.1 hPa (21.8 mmHg) at 20.0 °C (68.0 °F)

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Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Density	: 0.865 g/ml at 25 °C (77 °F)
Solubility	: No data available
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: 1.2 - 7 % (V)

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable if stored under recommended conditions.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

10.5. Incompatible materials

strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if inhaled.

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE	
ATE (gases)	4500.000 ppmV/4h
ATE (vapors)	11.000 mg/l/4h
ATE (dust, mist)	1.500 mg/l/4h

CHLOROBENZENE (13C6, 99%) (108-90-7 (Unlabeled))	
LD50 oral rat	1110 mg/kg
LC50 inhalation rat (ppm)	2965 ppm

1,4-DICHLOROBENZENE (13C6, 99%) (201595-59-7)	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat (mg/l)	> ≥ 5.07 mg/l
ATE (oral)	500.000 mg/kg body weight

1,2,3-TRICHLOROBENZENE (13C6, 99%) (87-61-6 (Unlabeled))	
LD50 oral rat	1830 mg/kg
ATE (oral)	1830.000 mg/kg body weight

1,2,3,4-TETRACHLOROBENZENE (13C6, 99%) (634-66-2 (Unlabeled))	
LD50 oral rat	1167 mg/kg
ATE (oral)	1167.000 mg/kg body weight

PENTACHLOROBENZENE (13C6, 99%) (608-93-5 (Unlabeled))	
LD50 oral rat	1080 mg/kg
ATE (oral)	1080.000 mg/kg body weight

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HEXACHLOROBENZENE (13C6, 99%) (93952-14-8)	
LD50 oral rat	10000 mg/kg
LC50 inhalation rat (mg/l)	3600 mg/m ³
TOLUENE UNLABELED (108-88-3)	
LD50 oral rat	> 5580 mg/kg
LD50 dermal rabbit	12196 mg/kg
LC50 inhalation rat (mg/l)	12500 - 28800 mg/m ³ 4 h
ATE (dermal)	12196.000 mg/kg body weight
ATE (gases)	4500.000 ppmV/4h
ATE (vapors)	12.500 mg/l/4h
ATE (dust, mist)	1.500 mg/l/4h

Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: Not classified Based on available data, the classification criteria are not met
Germ cell mutagenicity	: Not classified Based on available data, the classification criteria are not met
Carcinogenicity	: Suspected of causing cancer.
Reproductive toxicity	: Suspected of damaging fertility. Suspected of damaging the unborn child.
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: May cause damage to organs (liver, kidneys, brain, urinary organs) through prolonged or repeated exposure.
Aspiration hazard	: May be fatal if swallowed and enters airways. Based on available data, the classification criteria are not met
Potential Adverse human health effects and symptoms	: Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation	: May cause cancer by inhalation. May cause drowsiness or dizziness.
Symptoms/injuries after skin contact	: Causes skin irritation.
Symptoms/injuries after eye contact	: Causes serious eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

CHLOROBENZENE (13C6, 99%) (108-90-7 (Unlabeled))	
LC50 fish 1	10 mg/l <i>Cyprinodon variegatus</i> (sheepshead minnow) - 96 h
EC50 Daphnia 1	4.3 - 16 mg/l <i>Daphnia magna</i> (Water flea) - 24 h
EC50 other aquatic organisms 1	10.7 mg/l <i>Daphnia magna</i> (Water flea) - 48 h
LC50 fish 2	4.5 - 7.4 mg/kg <i>Lepomis macrochirus</i> (Bluegill) - 76 h
ErC50 (algae)	12.5 mg/l <i>Pseudokirchneriella subcapitata</i> (Green algae) - 96 h
NOEC (acute)	<1.4 mg/l <i>Daphnia magna</i> (Water flea) - 11 d
NOEC (chronic)	6.2 mg/l <i>Cyprinodon variegatus</i> (Sheepshead minnow) - 96 h

1,4-DICHLOROBENZENE (13C6, 99%) (201595-59-7)	
LC50 fish 1	2.1 mg/l <i>Danio rerio</i> (zebra fish) - 96
LC50 other aquatic organisms 1	28 mg/l <i>Desmodesmus subspicatus</i> (Green algae) - 48 h
EC50 Daphnia 1	0.70 mg/l <i>Daphnia magna</i> (Water flea) - 48 h
LC50 fish 2	4.2 mg/l <i>Pimephales promelas</i> (Fathead minnow) - 96 h
LOEC (acute)	5.6 mg/l <i>Cyprinodon variegatus</i> (Sheepshead minnow) - 96 h
LOEC (chronic)	0.263 mg/l Other fish - 10 d

1,2,3-TRICHLOROBENZENE (13C6, 99%) (87-61-6 (Unlabeled))	
LC50 fish 1	2.2 mg/l <i>Gambusia affinis</i> (Mosquito fish) - 96 h
EC50 Daphnia 1	1.45 mg/l <i>Daphnia magna</i> (Water flea) - 48 h

1,2,3,4-TETRACHLOROBENZENE (13C6, 99%) (634-66-2 (Unlabeled))	
LC50 fish 1	1.1 mg/l <i>Pimephales promelas</i> (Fathead minnow) - 96 h
EC50 Daphnia 1	0.13 mg/l <i>Daphnia</i> - 48 h

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PENTACHLOROBENZENE (13C6, 99%) (608-93-5 (Unlabeled))	
LC50 fish 1	0.247 mg/l - Pimephales promelas (fathead minnow) - 96 h
HEXACHLOROBENZENE (13C6, 99%) (93952-14-8)	
LC50 fish 1	7.6 mg/l Lepomis macrochirus (Bluegill) - 96 h
EC50 Daphnia 1	0.0048 mg/l Daphnia magna (Water flea) - 48 h
NOEC (chronic)	0.005 mg/l Pimephales promelas (fathead minnow) - 96 h
TOLUENE UNLABELED (108-88-3)	
LC50 fish 1	74 - 340 mg/l Lepomis macrochirus (Bluegill) - 96h
LC50 other aquatic organisms 1	10 mg/l Pseudokirchneriella subcapitata (Green algae) - 24 h
EC50 Daphnia 1	8 mg/l Daphnia magna (Water flea) - 24h
LC50 fish 2	7.63 mg/l Oncorhynchus mykiss (Rainbow trout) - 96 h
EC50 Daphnia 2	6 mg/l Daphnia magna (Water flea) - Immobilization - 48 h
ErC50 (algae)	245 mg/l Chlorella vulgaris (Fresh water algae) - 24 h
LOEC (chronic)	8.04 mg/l Pimephales promelas (Fathead minnow) - 7 d
NOEC (chronic)	5.44 mg/l Pimephales promelas (fathead minnow) - 7 d

12.2. Persistence and degradability

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE	
Persistence and degradability	May cause long-term adverse effects in the environment.
CHLOROBENZENE (13C6, 99%) (108-90-7 (Unlabeled))	
Persistence and degradability	Not available.
1,2,3-TRICHLOROBENZENE (13C6, 99%) (87-61-6 (Unlabeled))	
Persistence and degradability	Not available.
1,2,3,4-TETRACHLOROBENZENE (13C6, 99%) (634-66-2 (Unlabeled))	
Persistence and degradability	Not available.
HEXACHLOROBENZENE (13C6, 99%) (93952-14-8)	
Persistence and degradability	Not available.

12.3. Bioaccumulative potential

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE	
Bioaccumulative potential	Not established.
CHLOROBENZENE (13C6, 99%) (108-90-7 (Unlabeled))	
Log Pow	2.89
1,4-DICHLOROBENZENE (13C6, 99%) (201595-59-7)	
Bioconcentration factor (BCF REACH)	112 Oncorhynchus mykiss (Rainbow trout) - 7 d
Log Pow	3.40
1,2,3-TRICHLOROBENZENE (13C6, 99%) (87-61-6 (Unlabeled))	
Log Pow	4.016

12.4. Mobility in soil

CHLOROBENZENE (13C6, 99%) (108-90-7 (Unlabeled))	
Ecology - soil	Not available.
1,4-DICHLOROBENZENE (13C6, 99%) (201595-59-7)	
Ecology - soil	Not available.
1,2,3-TRICHLOROBENZENE (13C6, 99%) (87-61-6 (Unlabeled))	
Ecology - soil	Not available.
1,2,3,4-TETRACHLOROBENZENE (13C6, 99%) (634-66-2 (Unlabeled))	
Ecology - soil	Not available.
HEXACHLOROBENZENE (13C6, 99%) (93952-14-8)	
Ecology - soil	Not available.

12.5. Results of PBT and vPvB assessment

No additional information available

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE ES-5401

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12.6. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations.

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to Comply with applicable regulations.

Additional information : Handle empty containers with care because residual vapors are flammable.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT) : 1294
DOT NA no. UN1294

14.2. UN proper shipping name

DOT Proper Shipping Name : Toluene

Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid



Packing group (DOT) : II - Medium Danger

DOT Special Provisions (49 CFR 172.102) : IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

DOT Packaging Exceptions (49 CFR 173.xxx) : 150

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

Marine pollutant : No

14.3. Additional information

Other information : No supplementary information available.

Overland transport

Packing group (ADR) : II

Class (ADR) : 3 - Flammable liquid

Hazard identification number (Kemler No.) : 33

Classification code (ADR) : F1

Danger labels (ADR) : 3 - Flammable liquids



Orange plates : An orange rectangular plate with a black border. The number '33' is printed in black in the upper half, and the number '1294' is printed in black in the lower half.

Tunnel restriction code : D/E

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE ES-5401

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Limited quantities (ADR) : 1L
EAC : 3YE
Excepted quantities (ADR) : E2

Transport by sea

DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
MFAG-No : 130

Air transport

DOT Quantity Limitations Passenger aircraft/rail : 5 L
(49 CFR 173.27)
DOT Quantity Limitations Cargo aircraft only (49 : 60 L
CFR 175.75)
Civil Aeronautics Law : Flammable liquids

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE	
Listed on SARA Section 313 (Specific toxic chemical listings)	
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
TOLUENE UNLABELED (108-88-3)	
Listed on SARA Section 313 (Specific toxic chemical listings)	
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard

15.2. International regulations

CANADA

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
TOLUENE UNLABELED (108-88-3)	
Listed on the Canadian DSL (Domestic Substances List) inventory.	

15.2.1. National regulations

No additional information available

15.3. US State regulations

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE()	
State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List WARNING! This product contains a chemical known by the state of California to cause birth defects or other reproductive harm.

MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE ES-5401

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according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

TOLUENE UNLABELED (108-88-3)

U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - New Jersey - Right to Know Hazardous Substance List
WARNING! This product contains a chemical known by the state of California to cause birth defects or other reproductive harm.

SECTION 16: Other information

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of R-, H- and EUH-phrases::

Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Asp. Tox. 1	Aspiration hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Carc. 2	Carcinogenicity Category 2
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Flam. Liq. 2	Flammable liquids Category 2
Flam. Liq. 3	Flammable liquids Category 3
Flam. Sol. 1	Flammable solids Category 1
Repr. 2	Reproductive toxicity Category 2
Repr. 2	Reproductive toxicity Category 2
Skin Irrit. 2	skin corrosion/irritation Category 2
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 1	Specific target organ toxicity (single exposure) Category 1
STOT SE 2	Specific target organ toxicity (single exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H225	Highly flammable liquid and vapor
H226	Flammable liquid and vapor
H228	Flammable solid
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H350	May cause cancer
H351	Suspected of causing cancer
H361	Suspected of damaging fertility or the unborn child
H361d	Suspected of damaging the unborn child
H370	Causes damage to organs
H371	May cause damage to organs
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
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects
R10	Flammable
R11	Highly flammable
R20	Harmful by inhalation
R20/22	Harmful by inhalation and if swallowed
R22	Harmful if swallowed

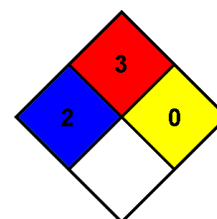
MONO-HEXA CHLOROBENZENE SOLUTION (13C6, 99%) 500 UG/ML IN TOLUENE ES-5401

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R36	Irritating to eyes
R36/37/38	Irritating to eyes, respiratory system and skin
R36/38	Irritating to eyes and skin
R40	Limited evidence of a carcinogenic effect
R45	May cause cancer
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R62	Possible risk of impaired fertility
R63	Possible risk of harm to the unborn child
R65	Harmful: may cause lung damage if swallowed
R67	Vapors may cause drowsiness and dizziness
F	Highly flammable
N	Dangerous for the environment
Xi	Irritant
Xn	Harmful

- NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
- NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all ambient conditions.
- NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

- Health : 2 Moderate Hazard - Temporary or minor injury may occur
- Flammability : 3 Serious Hazard
- Physical : 0 Minimal Hazard

CIL Mixture SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product