



# CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 14/09/2017

Revision date: 04/05/2018

Supersedes: 14/09/2017

Version: 1.1

ES-5473-T

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

#### 1.1. Product identifier

Product form : Mixtures  
Product name : CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE  
Product code : ES-5473-T

#### 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

##### 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](mailto:cilsales@isotope.com) [www.isotope.com](http://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  
Skin Irrit. 2 H315  
Repr. 2 H361  
STOT SE 3 H336  
STOT RE 2 H373  
Asp. Tox. 1 H304

Full text of hazard classes and H-statements : see section 16

##### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

F; R11  
Xi; R38  
Xn; R65  
Repr.Cat.3; R62  
Repr.Cat.3; R63  
R67  
N; R51/53  
Xn; R48/20

Full text of R-phrases: see section 16

##### GHS-US classification

Flam. Liq. 2 H225  
Skin Irrit. 2 H315  
Repr. 2 H361  
STOT SE 3 H336  
STOT RE 2 H373  
Asp. Tox. 1 H304  
Aquatic Acute 2 H401

Full text of H statements : see section 16

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### Adverse physicochemical, human health and environmental effects

brain. kidneys. liver. urinary bladder. Suspected of damaging fertility. Suspected of damaging the unborn child. May cause damage to organs (brain, kidneys, liver, urinary bladder) (if inhaled, if swallowed, in contact with skin). May be fatal if swallowed and enters airways. May cause drowsiness or dizziness. Causes skin irritation.

## 2.2. Label elements

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

Hazard pictograms (CLP)



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  
H336 - May cause drowsiness or dizziness  
H361 - Suspected of damaging fertility. Suspected of damaging the unborn child (if inhaled, if swallowed, in contact with skin)  
H373 - May cause damage to organs (brain, kidneys, liver, urinary bladder) through prolonged or repeated exposure (if inhaled, if swallowed, in contact with skin)

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 hands, forearms and face thoroughly after handling  
P271 - Use only outdoors or in a well-ventilated area  
P280 - Wear protective clothing, protective gloves

### GHS-US labeling

Hazard pictograms (GHS-US)



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  
H336 - May cause drowsiness or dizziness  
H361 - Suspected of damaging fertility, Suspected of damaging the unborn child (Dermal, Inhalation, oral)  
H373 - May cause damage to organs (brain, kidneys, liver, urinary bladder) through prolonged or repeated exposure (Dermal, Inhalation, oral)  
H401 - Toxic to aquatic life

Precautionary statements (GHS-US)

: P201 - Obtain special instructions before use  
P202 - Do not handle until all safety precautions have been read and understood  
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, mist, spray, gas, vapors  
P264 - Wash hands, forearms and face 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 doctor, a POISON CENTER  
P302+P352 - If on skin: Wash with plenty of water

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P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing  
P308+P313 - If exposed or concerned: Get medical advice/attention  
P312 - Call a doctor, a POISON CENTER if you feel unwell  
P314 - Get medical advice/attention if you feel unwell  
P321 - Specific treatment (see Hazardous component(s) for labeling on this label)  
P331 - Do NOT induce vomiting  
P332+P313 - If skin irritation occurs: Get medical advice/attention  
P362+P364 - Take off contaminated clothing and wash it before reuse  
P370+P378 - In case of fire: Use alcohol resistant foam, carbon dioxide (CO<sub>2</sub>), dry extinguishing powder to extinguish  
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 hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

### 2.3. Other hazards

PBT: not relevant – no registration required

## 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 (REACH-no) 01-2119471310-51	99.99538	F; R11 Xi; R38 Xn; R65 Repr.Cat.3; R62 Repr.Cat.3; R63 R67 N; R51/53 Xn; R48/20
1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%)	(CAS No) 90-15-3 (Unlabeled) (EC No) 201-969-4 (EC Index No) 604-029-00-5	0.00116	Xn; R21/22 N; R51/53 T; R24 Xi; R41 Xi; R37/38
2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%)	(CAS No) 135-19-3 (Unlabeled) (EC No) 205-182-7 (EC Index No) 604-007-00-5	0.00116	N; R50 Xn; R20/22
2-HYDROXYFLUORENE (RANDOM-13C6, 99%)	(CAS No) 2443-58-5 (Unlabeled) (EC No) 219-478-9 (Unlabeled) (EC Index No)	0.00029	Xi; R36/37/38
3-HYDROXYFLUORENE (13C6, 98%)	(CAS No) 6344-67-8 (Unlabeled)	0.00029	Xi; R36/37/38 N; R50/53
9-HYDROXYFLUORENE (13C6, 99%)	(CAS No) 1689-64-1 (Unlabeled) (EC No) 216-879-0	0.00029	Not classified
1-HYDROXYPHENANTHRENE (13C4, 99%)	(CAS No) 2433-56-9 (Unlabeled) (EC No) 207-602-4	0.00029	Xi; R36/37/38
2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%)	(CAS No) 605-55-0 (Unlabeled)	0.00029	Xi; R36/37/38
3-HYDROXYPHENANTHRENE (RING-13C6, 99%)	(CAS No) 605-87-8 (Unlabeled)	0.00029	Xi; R36/37/38
4-HYDROXYPHENANTHRENE (13C4, 99%)	(CAS No) 7651-86-7 (Unlabeled) (EC Index No)	0.00029	Xi; R36/37/38
1-HYDROXYPYRENE (13C6, 99%)	(CAS No) 5315-79-7 (Unlabeled)	0.00029	Xi; R36/37/38

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 (REACH-no) 01-2119471310-51	99.99538	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%)	(CAS No) 90-15-3 (Unlabeled) (EC No) 201-969-4 (EC Index No) 604-029-00-5	0.00116	Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 Aquatic Chronic 2, H411
2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%)	(CAS No) 135-19-3 (Unlabeled) (EC No) 205-182-7 (EC Index No) 604-007-00-5	0.00116	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Eye Irrit. 2, H319 Aquatic Acute 1, H400
2-HYDROXYFLUORENE (RANDOM-13C6, 99%)	(CAS No) 2443-58-5 (Unlabeled) (EC No) 219-478-9 (Unlabeled) (EC Index No)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
3-HYDROXYFLUORENE (13C6, 98%)	(CAS No) 6344-67-8 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 Aquatic Chronic 1, H410
9-HYDROXYFLUORENE (13C6, 99%)	(CAS No) 1689-64-1 (Unlabeled) (EC No) 216-879-0	0.00029	Not classified
1-HYDROXYPHENANTHRENE (13C4, 99%)	(CAS No) 2433-56-9 (Unlabeled) (EC No) 207-602-4	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%)	(CAS No) 605-55-0 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
3-HYDROXYPHENANTHRENE (RING-13C6, 99%)	(CAS No) 605-87-8 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
4-HYDROXYPHENANTHRENE (13C4, 99%)	(CAS No) 7651-86-7 (Unlabeled) (EC Index No)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
1-HYDROXYPYRENE (13C6, 99%)	(CAS No) 5315-79-7 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335

Name	Product identifier	%	GHS-US classification
TOLUENE UNLABELED	(CAS No) 108-88-3	99.99538	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Acute 2, H401
1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%)	(CAS No) 90-15-3 (Unlabeled)	0.00116	Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%)	(CAS No) 135-19-3 (Unlabeled)	0.00116	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Eye Irrit. 2A, H319 Aquatic Acute 1, H400
2-HYDROXYFLUORENE (RANDOM-13C6, 99%)	(CAS No) 2443-58-5 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
3-HYDROXYFLUORENE (13C6, 98%)	(CAS No) 6344-67-8 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 Aquatic Chronic 1, H410
9-HYDROXYFLUORENE (13C6, 99%)	(CAS No) 1689-64-1 (Unlabeled)	0.00029	Not classified
1-HYDROXYPHENANTHRENE (13C4, 99%)	(CAS No) 2433-56-9 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%)	(CAS No) 605-55-0 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
3-HYDROXYPHENANTHRENE (RING-13C6, 99%)	(CAS No) 605-87-8 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
4-HYDROXYPHENANTHRENE (13C4, 99%)	(CAS No) 7651-86-7 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335

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Name	Product identifier	%	GHS-US classification
1-HYDROXYPYRENE (13C6, 99%)	(CAS No) 5315-79-7 (Unlabeled)	0.00029	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335

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

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures general	: IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or 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: Wash with plenty of soap and water, Get immediate medical advice/attention. Get medical advice/attention. Specific treatment (see Hazard pictograms (CLP) on this label).
First-aid measures after eye contact	: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
First-aid measures after ingestion	: Immediately call a poison center or doctor/physician.

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

Symptoms/injuries	: Suspected of damaging fertility. Suspected of damaging the unborn child (in contact with skin, if inhaled, if swallowed). Causes damage to organs (brain, kidneys, liver, urinary bladder) (in contact with skin, if inhaled, if swallowed).
Symptoms/injuries after inhalation	: Harmful if inhaled. May cause drowsiness or dizziness.
Symptoms/injuries after skin contact	: Harmful in contact with skin. Causes skin irritation. Repeated exposure to this material can result in absorption through skin causing significant health hazard.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be fatal if swallowed and enters airways. Risk of lung edema.

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

Treat symptomatically.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media	: Dry powder. Dry sand. Dry chemical. Foam. Carbon dioxide.
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.
Reactivity	: Highly flammable liquid and vapor. vapors may form flammable mixture with air.

#### 5.3. Advice for firefighters

Firefighting instructions	: Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. Wear recommended personal protective equipment.
Other information	: Use water spray to cool exposed surfaces.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Flammable liquids. No open flames. No smoking. Eliminate every possible source of ignition. Use special care to avoid static electric charges.
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##### 6.1.1. For non-emergency personnel

Emergency procedures	: Use personal protective equipment as required. Ensure adequate air ventilation. Avoid breathing vapors, mist, gas. Eliminate all ignition sources if safe to do so. Evacuate unnecessary personnel. Special attention should be given to low areas/pits where flammable vapors can accumulate.
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##### 6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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#### 6.2. Environmental precautions

Prevent liquid from entering sewers, watercourses, underground or low areas. Do not allow to enter drains or water courses. Do not discharge the product into the environment.

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### 6.3. Methods and material for containment and cleaning up

- For containment : Dike and contain spill.
- Methods for cleaning up : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters. This material and its container must be disposed of in a safe way, and as per local legislation.
- Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Additional hazards when processed : Avoid all eye and skin contact and do not breathe vapor and mist. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Handle empty containers with care because residual vapors are flammable.
- Precautions for safe handling : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapors may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Do not breathe dust, fume, gas, spray, vapors, mist. Do not get in eyes, on skin, or on clothing. Use only outdoors or in a well-ventilated area. No open flames. No smoking. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust, fume, gas, mist, spray, vapors.
- Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. Wash hands, forearms and face thoroughly after handling.

### 7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Ground/bond container and receiving equipment. Store in a well-ventilated place. Keep container tightly closed. Store locked up. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof Lighting equipment, ventilating equipment.
- Storage conditions : Store refrigerated (-5°C to 5°C). Protect from light.
- Incompatible materials : Heat sources.
- Storage area : Under inert gas.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	20.00000000 ppm
Italy - Portugal - USA ACGIH	Remark (ACGIH)	Visual impairment. Female reproductive. Pregnancy loss. 2015 Adoption. Substances for which there is a Biological Exposure Index or Indices (see BEI® section). Not classifiable as a human carcinogen.; Component: Toluene CAS-No.: 108-88-3 Parameters: Toluene Value: 0.0300 mg/l Biological specimen: Urine Remarks: End of shift (As soon as possible after exposure ceases) Basis: ACGIH - Biological Exposure Indices (BEI); Component: Toluene CAS-No.: 108-88-3 Parameters: Toluene Value: 0.0200 mg/l Biological specimen: In blood Remarks: Prior to last shift of workweek Basis: ACGIH - Biological Exposure Indices (BEI); Component: Toluene CAS-No.: 108-88-3 Parameters: o-Cresol Value: 0.3000 mg/g Biological specimen: Urine Remarks: End of shift (As soon as possible after exposure ceases) Basis: ACGIH - Biological Exposure Indices (BEI)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	375 mg/m³ USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (TWA) (ppm)	100 ppm USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (STEL) (mg/m³)	560 mg/m³ USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (STEL) (ppm)	150 ppm USA. NIOSH Recommended Exposure Limits
USA OSHA	OSHA PEL (TWA) (mg/m³)	375 mg/m³ USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000

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USA OSHA	OSHA PEL (TWA) (ppm)	100 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (STEL) (mg/m <sup>3</sup> )	560 mg/m <sup>3</sup> USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (STEL) (ppm)	150 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (Ceiling) (ppm)	300 ppm USA. Occupational Exposure Limits (OSHA) - Table Z-2
USA OSHA	Remark (OSHA)	OSHA PEL (TWA) - 200 ppm - USA. Occupational Exposure Limits (OSHA) - Table Z-2. Remarks: Z37.12-1967

TOLUENE UNLABELED (108-88-3)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	20.00000000 ppm USA. ACGIH Threshold Limit Values (TLV)
Italy - Portugal - USA ACGIH	Remark (ACGIH)	Visual impairment. Female reproductive. Pregnancy loss. 2015 Adoption. Substances for which there is a Biological Exposure Index or Indices (see BEI® section). Not classifiable as a human carcinogen.; Component: Toluene CAS-No.: 108-88-3 Parameters: Toluene Value: 0.0300 mg/l Biological specimen: Urine Remarks: End of shift (As soon as possible after exposure ceases) Basis: ACGIH - Biological Exposure Indices (BEI); Component: Toluene CAS-No.: 108-88-3 Parameters: Toluene Value: 0.0200 mg/l Biological specimen: In blood Remarks: Prior to last shift of workweek Basis: ACGIH - Biological Exposure Indices (BEI); Component: Toluene CAS-No.: 108-88-3 Parameters: o-Cresol Value: 0.3000 mg/g Biological specimen: Urine Remarks: End of shift (As soon as possible after exposure ceases) Basis: ACGIH - Biological Exposure Indices (BEI)
USA NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	375 mg/m <sup>3</sup> USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (TWA) (ppm)	100 ppm USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (STEL) (mg/m <sup>3</sup> )	560 mg/m <sup>3</sup> USA. NIOSH Recommended Exposure Limits
USA NIOSH	NIOSH REL (STEL) (ppm)	150 ppm USA. NIOSH Recommended Exposure Limits
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	375 mg/m <sup>3</sup> USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (TWA) (ppm)	100 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (STEL) (mg/m <sup>3</sup> )	560 mg/m <sup>3</sup> USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (STEL) (ppm)	150 ppm USA. OSHA - TABLE Z-1 Limits for Air Contaminants 1910.1000
USA OSHA	OSHA PEL (Ceiling) (ppm)	300 ppm USA. Occupational Exposure Limits (OSHA) - Table Z-2
USA OSHA	Remark (OSHA)	OSHA PEL (TWA) - 200 ppm - USA. Occupational Exposure Limits (OSHA) - Table Z-2. Remarks: Z37.12-1967

### 8.2. Exposure controls

Appropriate engineering controls

: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Personal protective equipment

: Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



Materials for protective clothing

: Wear suitable protective clothing and gloves.

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Hand protection	: Wear suitable protective clothing and gloves.
Eye protection	: Wear eye protection. Chemical goggles or face shield with safety glasses.
Skin and body protection	: Wear suitable protective clothing, gloves and eye/face protection. Wear suitable protective clothing.
Respiratory protection	: In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator. Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear respiratory protection.
Environmental exposure controls	: Avoid release to the environment.

## 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	: Aromatic
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 °C (39.2 °F) - closed cup
Auto-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)
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Specific gravity / density	: 0.865 g/ml at 25 °C (77 °F)
Solubility	: Water: 0.5 g/l at 15 °C (59 °F)
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
Explosion limits	: 1.2 - 7 % (V)

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Highly flammable liquid and vapor. vapors may form flammable mixture with air.

### 10.2. Chemical stability

See storage and expiration date on CoA.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

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

### 10.5. Incompatible materials

Strong oxidizing agents.

### 10.6. Hazardous decomposition products

Carbon oxides (CO, CO<sub>2</sub>).



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### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity : Not classified

CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE	
LD50 oral rat	> 5580 mg/kg
LD50 dermal rabbit	12196 mg/kg
LC50 inhalation rat (mg/l)	12500 - 28800 mg/m <sup>3</sup> 4 h
ATE CLP (dermal)	12196.000 mg/kg body weight
ATE CLP (vapors)	12.500 mg/l/4h
ATE CLP (dust, mist)	12.500 mg/l/4h

TOLUENE UNLABELED (108-88-3)	
LD50 oral rat	> 5580 mg/kg
LD50 dermal rabbit	12196 mg/kg
LC50 inhalation rat (mg/l)	12,500 - 28,800 mg/m <sup>3</sup> - 4 h
ATE CLP (dermal)	12196.000 mg/kg body weight
ATE CLP (vapors)	12.500 mg/l/4h
ATE CLP (dust, mist)	12.500 mg/l/4h

1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))	
LD50 oral rat	1870 mg/kg
LD50 dermal rabbit	880 mg/kg
ATE CLP (oral)	1870.000 mg/kg body weight
ATE CLP (dermal)	880.000 mg/kg body weight

2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))	
LD50 oral rat	1960 mg/kg
LD50 dermal rabbit	> 10000 mg/kg
LC50 inhalation rat (mg/l)	> ≥ 770 mg/m <sup>3</sup>
ATE CLP (oral)	1960.000 mg/kg body weight
ATE CLP (dust, mist)	1.500 mg/l/4h

Skin corrosion/irritation : Causes skin irritation.  
Skin  
Rabbit  
Causes skin irritation  
24 Hours

Serious eye damage/irritation : Not classified  
Eyes  
Rabbit  
No eye irritation  
(OECD 405 method)

Respiratory or skin sensitization : Not available

Germ cell mutagenicity : Rat. Liver. DNA Damage

Carcinogenicity : Not classified

Reproductive toxicity : Damage to fetus possible. Suspected human reproductive toxicant. . Reproductive toxicity - Rat - Inhalation. Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count). . Experiments have shown reproductive toxicity effects in male and female laboratory animals. . Developmental Toxicity - Rat - Oral. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g, stunted fetus).

Specific target organ toxicity – single exposure : May cause drowsiness or dizziness.

Specific target organ toxicity – repeated exposure : May cause damage to organs (brain, kidneys, liver, urinary bladder) through prolonged or repeated exposure (if inhaled, if swallowed, in contact with skin).

Aspiration hazard : May be fatal if swallowed and enters airways.

Potential Adverse human health effects and symptoms : Symptoms/injuries. IF INHALED: lungs. Pulmonary irritation. Pulmonary edema. Chest pain. central nervous system. 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. Stomach - Irregularities - Based on Human Evidence. Lung irritation, chest pain, pulmonay edema, Inhalation studies have shown the development of inflammatory and ulcerous lesions of the penis, prepuce, and scrotom in animals.

IARC group : 3

Symptoms/injuries after inhalation : Harmful if inhaled. May cause drowsiness or dizziness.

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Symptoms/injuries after skin contact	: Harmful in contact with skin. Causes skin irritation. Repeated exposure to this material can result in absorption through skin causing significant health hazard.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be fatal if swallowed and enters airways. Risk of lung edema.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general	: Toxic to bees.
Ecology - water	: Toxic to aquatic life.

CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE	
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
ErC50 (other aquatic plants)	10 mg/l Pseudokirchneriella subcapitata (Green algae) - 24 h
NOEC (chronic)	5.44 mg/l Pimephales promelas (fathead minnow) - 7 d

TOLUENE UNLABELED (108-88-3)	
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
ErC50 (other aquatic plants)	10 mg/l Pseudokirchneriella subcapitata (Green algae) - 24 h
NOEC (chronic)	5.44 mg/l Pimephales promelas (fathead minnow) - 7 d

9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))	
ErC50 (algae)	0.5 mg/l Mortality Dunaliella bioculata -61h

1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))	
LC50 fish 1	4.1 - 4.7 mg/l Pimephales promelas (fathead minnow) - 96 h

2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))	
LC50 fish 1	3.46 mg/l Pimephales promelas (fathead minnow) -96h

### 12.2. Persistence and degradability

CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE	
Persistence and degradability	Readily biodegradable.

TOLUENE UNLABELED (108-88-3)	
Persistence and degradability	Readily biodegradable.

3-HYDROXYFLUORENE (13C6, 98%) (6344-67-8 (Unlabeled))	
Persistence and degradability	May cause long-term adverse effects in the environment.

9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))	
Persistence and degradability	Not available.

1-HYDROXYPHENANTHRENE (13C4, 99%) (2433-56-9 (Unlabeled))	
Persistence and degradability	Not available.

2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))	
Persistence and degradability	Not available.

3-HYDROXYPHENANTHRENE (RING-13C6, 99%) (605-87-8 (Unlabeled))	
Persistence and degradability	Not available.

1-HYDROXYPYRENE (13C6, 99%) (5315-79-7 (Unlabeled))	
Persistence and degradability	Not available.

1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))	
Persistence and degradability	Not available.

### 12.3. Bioaccumulative potential

CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE	
BCF fish 1	0.05 mg/l Leuciscus idus (Golden orfe) - 3 d
Bioconcentration factor (BCF REACH)	90

TOLUENE UNLABELED (108-88-3)	
BCF fish 1	0.05 mg/l Leuciscus idus (Golden orfe) - 3 d

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<b>TOLUENE UNLABELED (108-88-3)</b>	
Bioconcentration factor (BCF REACH)	90
<b>3-HYDROXYFLUORENE (13C6, 98%) (6344-67-8 (Unlabeled))</b>	
Log Pow	3.641
<b>9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))</b>	
Bioaccumulative potential	Not available.
<b>1-HYDROXYPHENANTHRENE (13C4, 99%) (2433-56-9 (Unlabeled))</b>	
Bioaccumulative potential	Not available.
<b>2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))</b>	
Bioaccumulative potential	Not available.
<b>3-HYDROXYPHENANTHRENE (RING-13C6, 99%) (605-87-8 (Unlabeled))</b>	
Bioaccumulative potential	Not available.
<b>4-HYDROXYPHENANTHRENE (13C4, 99%) (7651-86-7 (Unlabeled))</b>	
Log Pow	3.86
<b>1-HYDROXYPYRENE (13C6, 99%) (5315-79-7 (Unlabeled))</b>	
Bioaccumulative potential	Not available.
<b>1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))</b>	
Log Pow	2.85
Bioaccumulative potential	Not available.
<b>2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))</b>	
Bioaccumulative potential	No data available.

### 12.4. Mobility in soil

<b>9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))</b>	
Ecology - soil	Not available.
<b>1-HYDROXYPHENANTHRENE (13C4, 99%) (2433-56-9 (Unlabeled))</b>	
Ecology - soil	Not available.
<b>2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))</b>	
Ecology - soil	Not available.
<b>3-HYDROXYPHENANTHRENE (RING-13C6, 99%) (605-87-8 (Unlabeled))</b>	
Ecology - soil	Not available.
<b>1-HYDROXYPYRENE (13C6, 99%) (5315-79-7 (Unlabeled))</b>	
Ecology - soil	Not available.
<b>1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))</b>	
Ecology - soil	Not available.
<b>2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))</b>	
Ecology - soil	No data available.

### 12.5. Results of PBT and vPvB assessment

<b>CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE</b>	
PBT: not relevant – no registration required	
<b>TOLUENE UNLABELED (108-88-3)</b>	
PBT: not relevant – no registration required	

### 12.6. Other adverse effects

Other adverse effects : Toxic to aquatic life with long lasting effects. Disposal must be done according to official regulations. 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.
Product/Packaging disposal recommendations:	: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Additional information	: Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials	: Dispose of as unused product.

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### SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

#### 14.1. UN number

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

#### 14.2. UN proper shipping name

Proper Shipping Name (DOT) : Toluene  
Class (DOT) : 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

#### 14.3. Additional information

Emergency Response Guide (ERG) Number : 130  
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  
Hazard labels (ADR) : 3 - Flammable liquids



Orange plates : Two orange rectangular plates with black borders. The top plate contains the number "33" in black. The bottom plate contains the number "1294" in black.

Tunnel restriction code (ADR) : D/E  
Limited quantities (ADR) : 1I  
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

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### 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

#### CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE

Listed on the United States TSCA (Toxic Substances Control Act) inventory  
Subject to reporting requirements of United States SARA Section 313

SARA Section 302 Threshold Planning Quantity (TPQ)	SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302
----------------------------------------------------	------------------------------------------------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
-------------------------------------	-----------------------------------------------------------------------------------

#### TOLUENE UNLABELED (108-88-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

CERCLA RQ	1000 lb
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SARA Section 302 Threshold Planning Quantity (TPQ)	SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302
----------------------------------------------------	------------------------------------------------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
-------------------------------------	-----------------------------------------------------------------------------------

SARA Section 313 - Emission Reporting	Subject to reporting requirements of United States SARA Section 313
---------------------------------------	---------------------------------------------------------------------

#### 2-HYDROXYFLUORENE (RANDOM-13C6, 99%) (2443-58-5 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
----------------------------------------------------	------------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
-------------------------------------	---------------------------------

SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313.
---------------------------------------	------------------------------------------------------------------------------

#### 3-HYDROXYFLUORENE (13C6, 98%) (6344-67-8 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
----------------------------------------------------	------------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
-------------------------------------	---------------------------------

SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313.
---------------------------------------	------------------------------------------------------------------------------

#### 9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
----------------------------------------------------	-----------------------------------------------------------------------------

SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313
---------------------------------------	-----------------------------------------------------------------------------

#### 1-HYDROXYPHENANTHRENE (13C4, 99%) (2433-56-9 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
----------------------------------------------------	-----------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
-------------------------------------	---------------------------------

SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313
---------------------------------------	-----------------------------------------------------------------------------

#### 2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
----------------------------------------------------	-----------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
-------------------------------------	---------------------------------

SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313
---------------------------------------	-----------------------------------------------------------------------------

#### 3-HYDROXYPHENANTHRENE (RING-13C6, 99%) (605-87-8 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
----------------------------------------------------	-----------------------------------------------------------------------------

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
-------------------------------------	---------------------------------

SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313
---------------------------------------	-----------------------------------------------------------------------------

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<b>4-HYDROXYPHENANTHRENE (13C4, 99%) (7651-86-7 (Unlabeled))</b>	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313.
<b>1-HYDROXYPYRENE (13C6, 99%) (5315-79-7 (Unlabeled))</b>	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313
<b>1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))</b>	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313
<b>2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))</b>	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
SARA Section 313 - Emission Reporting	Not subject to reporting requirements of the United States SARA Section 313

### 15.2. International regulations

#### CANADA

<b>CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE</b>	
Listed on the Canadian DSL (Domestic Substances List)	
<b>TOLUENE UNLABELED (108-88-3)</b>	
Listed on the Canadian DSL (Domestic Substances List)	
<b>2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))</b>	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	D2B Toxic material causing other toxic effects.

#### 15.2.1. National regulations

No additional information available

### 15.3. US State regulations

<b>CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE</b>				
U.S. - California - Proposition 65 - Carcinogens List	No			
U.S. - California - Proposition 65 - Developmental Toxicity	Yes			
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No			
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No			
State or local regulations	U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List			
<b>TOLUENE UNLABELED (108-88-3)</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	Yes	No	No	
<b>2-HYDROXYFLUORENE (RANDOM-13C6, 99%) (2443-58-5 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	

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<b>3-HYDROXYFLUORENE (13C6, 98%) (6344-67-8 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>1-HYDROXYPHENANTHRENE (13C4, 99%) (2433-56-9 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>3-HYDROXYPHENANTHRENE (RING-13C6, 99%) (605-87-8 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>4-HYDROXYPHENANTHRENE (13C4, 99%) (7651-86-7 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>1-HYDROXYPYRENE (13C6, 99%) (5315-79-7 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))</b>				
U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)
No	No	No	No	
<b>TOLUENE UNLABELED (108-88-3)</b>				
<b>State or local regulations</b>				
U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities				
U.S. - New Jersey - Right to Know Hazardous Substance List				
U.S. - New York - Reporting of Releases Part 597 - List of Hazardous Substances				
U.S. - Pennsylvania - RTK (Right to Know) List				

# CDC OH-PAH SPIKING STANDARD (13C, 99%) IN TOLUENE

ES-5473-T

## Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<b>TOLUENE UNLABELED (108-88-3)</b>
U.S. - Massachusetts - Right To Know List
<b>2-HYDROXYFLUORENE (RANDOM-13C6, 99%) (2443-58-5 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>3-HYDROXYFLUORENE (13C6, 98%) (6344-67-8 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>9-HYDROXYFLUORENE (13C6, 99%) (1689-64-1 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>1-HYDROXYPHENANTHRENE (13C4, 99%) (2433-56-9 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>2-HYDROXYPHENANTHRENE (RING-C-13C6, 99%) (605-55-0 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List
<b>3-HYDROXYPHENANTHRENE (RING-13C6, 99%) (605-87-8 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>4-HYDROXYPHENANTHRENE (13C4, 99%) (7651-86-7 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>1-HYDROXYPYRENE (13C6, 99%) (5315-79-7 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>1-HYDROXYNAPHTHALENE (1-NAPHTHOL) (13C6, 99%) (90-15-3 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List
<b>2-HYDROXYNAPHTHALENE (2-NAPHTHOL) (13C6, 99%) (135-19-3 (Unlabeled))</b>
<b>State or local regulations</b>
U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List

## SECTION 16: Other information

Other information

: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

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

Acute Tox. 3 (Dermal)	Acute toxicity (dermal) Category 3
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) 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



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Asp. Tox. 1	Aspiration hazard Category 1
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Flam. Liq. 2	Flammable liquids 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 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
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H311	Toxic in contact with skin
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H361	Suspected of damaging fertility or the unborn child
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
R11	Highly flammable
R20/22	Harmful by inhalation and if swallowed
R21/22	Harmful in contact with skin and if swallowed
R24	Toxic in contact with skin
R36/37/38	Irritating to eyes, respiratory system and skin
R37/38	Irritating to respiratory system and skin
R38	Irritating to skin
R41	Risk of serious damage to eyes
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation
R50	Very toxic to aquatic organisms
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
T	Toxic
Xi	Irritant
Xn	Harmful

NFPA health hazard

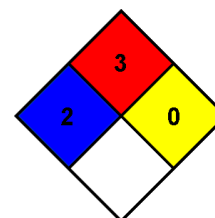
: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard

: 3 - Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions.

NFPA reactivity

: 0 - Material that in themselves are normally stable, even under fire conditions.



### 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*