



# EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/<sup>13</sup>C12, 99%) IN ISOOCTANE:NONANE

## 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: 25/01/2016

Revision date:

:

Version: 1.0

**EC-5385**

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

### 1.1. Product identifier

Product form : Mixtures  
Product name. : EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/<sup>13</sup>C12, 99%) IN ISOOCTANE:NONANE  
Product code : EC-5385

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

#### 1.2.1. Relevant identified uses

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
Acute Tox. 4 (Inhalation:dust,mist)	H332
Skin Irrit. 2	H315
Eye Irrit. 2	H319
STOT SE 3	H336
Asp. Tox. 1	H304
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

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

F; R11  
Xn; R20  
Xn; R65  
Xi; R38  
N; R50/53

Full text of R-phrases: see section 16

#### Classification (GHS-US)

Flam. Liq. 2	H225
Acute Tox. 4 (Inhalation)	H332
Skin Irrit. 2	H315
Eye Irrit. 2A	H319
STOT SE 3	H336
Asp. Tox. 1	H304
Aquatic Acute 1	H400

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Aquatic Chronic 1 H410

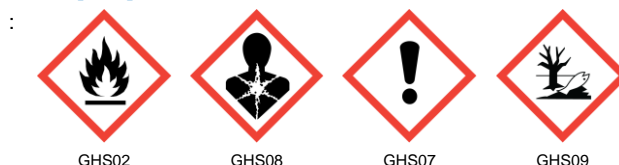
### Adverse physicochemical, human health and environmental effects

Kidney, Liver, Central nervous system.

## 2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazardous ingredients

: N-NONANE 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  
H410 - Very toxic 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  
P261 - Avoid breathing fume, 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)



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  
H400 - Very toxic to aquatic life  
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US)

: 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  
P261 - Avoid breathing fume, 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 eye protection, face protection, 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

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P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P312 - Call a POISON CENTER/doctor/physician 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  
P391 - Collect spillage  
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
N-NONANE UNLABELED	(CAS No) 111-84-2 (EC no) 203-913-4	50.94 - 96.14	R10 Xn; R20 Xn; R65 R67 Xi; R38
ISOOCTANE UNLABELED	(CAS No) 540-84-1 (EC no) 208-759-1 (EC index no) 601-009-00-8	3.86 - 49.06	Xi; R38 N; R50/53 R67 F; R11
2,2',5,5'-TETRACB UNLABELED	(CAS No) 35693-99-3 (EC index no) 602-039-00-4	0.000000014 - 0.00071	Xn; R22 N; R50/53
2,4,4'-TRICB UNLABELED	(CAS No) 7012-37-5 (EC no) 230-293-2	0.000000014 - 0.00071	Xi; R36/37/38 N; R50/53
2,2',4,5,5'-PENTACB UNLABELED	(CAS No) 37680-73-2	0.000000014 - 0.00071	R33
2,2',3,4,4',5'-HEXACB UNLABELED	(CAS No) 35065-28-2	0.000000014 - 0.00071	N; R50/53 R33
2,2',3,4,4',5,5'-HEPTACB UNLABELED	(CAS No) 35065-29-3	0.000000014 - 0.00071	R33
2,2',4,4',5,5'-HEXACB UNLABELED	(CAS No) 35065-27-1 (EC no) 215-648-1	0.000000014 - 0.00071	R33
2,2',5,5'-TETRACB (PCB-52) (13C12, 99%)	(CAS No) 208263-80-3 (EC index no) 602-039-00-4	0.000014	Carc.Cat.1; R45 N; R51/53 Xn; R48/20/21/22
2,4,4'-TRICB (PCB-28) (13C12, 99%)	(CAS No) 208263-76-7 (EC no) 230-293-2 (EC index no) 602-039-00-4	0.000014	Xn; R20/21/22 N; R50/53 R48
2,2',3,4,4',5,5'-HEPTACB (PCB-180) (13C12, 99%)	(CAS No) 35065-29-3 (Unlabeled)	0.000014	N; R50/53
2,2',3,4,4',5'-HEXACB (PCB-138) (13C12, 99%)	(CAS No) 208263-66-5 (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33
2,2',4,4',5,5'-HEXACB (PCB-153) (13C12, 99%)	(CAS No) 185376-58-3 (EC index no) 602-039-00-4	0.000014	N; R50/53 R33 R48
2,2',4,5,5'-PENTACB (PCB-101) (13C12, 99%)	(CAS No) 104130-39-4 (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33

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Name	Product identifier	%	Classification according to Directive 67/548/EEC
2,3,4,4'-TETRACB (PCB-60) (13C12, 99%)	(CAS No) 33025-41-1 (Unlabeled) (EC index no) 602-039-00-4	0.000014	N; R50/53 R33 R48
3,3',4,5,5'-PENTACB (PCB-127) (13C12, 99%)	(CAS No) 39635-33-1 (Unlabeled) (EC index no) 602-039-00-4	0.000014	N; R50/53 R33 R48
2,3',4',5-TETRACB (PCB-70) (13C12, 99%)	(CAS No) 208263-81-4 (EC index no) 602-039-00-4	0.000014	N; R50/53 R33 R48
2,3,3',5,5'-PENTACB (PCB-111) (13C12, 99%)	(CAS No) 235416-29-2 (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33
2,3,3',4,5,5'-HEXACB (PCB-159) (13C12, 99%)	(CAS No) 39635-35-3 (Unlabeled) (EC index no) 602-039-00-4	0.000014	N; R50/53 R33 R48
2,2',3,3',4,4',5-HEPTACB (PCB-170) (13C12, 99%)	(CAS No) 35065-30-6 (Unlabeled) (EC index no) 602-039-00-4	0.000014	N; R50/53 R33

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
N-NONANE UNLABELED	(CAS No) 111-84-2 (EC no) 203-913-4	50.94 - 96.14	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:vapour), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H336 Asp. Tox. 1, H304
ISOOCTANE UNLABELED	(CAS No) 540-84-1 (EC no) 208-759-1 (EC index no) 601-009-00-8	3.86 - 49.06	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',5,5'-TETRACB UNLABELED	(CAS No) 35693-99-3 (EC index no) 602-039-00-4	0.000000014 - 0.00071	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,4,4'-TRICB UNLABELED	(CAS No) 7012-37-5 (EC no) 230-293-2	0.000000014 - 0.00071	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',4,5,5'-PENTACB UNLABELED	(CAS No) 37680-73-2	0.000000014 - 0.00071	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,4,4',5'-HEXACB UNLABELED	(CAS No) 35065-28-2	0.000000014 - 0.00071	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,4,4',5,5'-HEPTACB UNLABELED	(CAS No) 35065-29-3	0.000000014 - 0.00071	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',4,4',5,5'-HEXACB UNLABELED	(CAS No) 35065-27-1 (EC no) 215-648-1	0.000000014 - 0.00071	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',5,5'-TETRACB (PCB-52) (13C12, 99%)	(CAS No) 208263-80-3 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,4,4'-TRICB (PCB-28) (13C12, 99%)	(CAS No) 208263-76-7 (EC no) 230-293-2 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,4,4',5,5'-HEPTACB (PCB-180) (13C12, 99%)	(CAS No) 35065-29-3 (Unlabeled)	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,4,4',5'-HEXACB (PCB-138) (13C12, 99%)	(CAS No) 208263-66-5 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',4,4',5,5'-HEXACB (PCB-153) (13C12, 99%)	(CAS No) 185376-58-3 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',4,5,5'-PENTACB (PCB-101) (13C12, 99%)	(CAS No) 104130-39-4 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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3,3',4,5,5'-PENTACB (PCB-127) (13C12, 99%)	(CAS No) 39635-33-1 (Unlabeled) (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,3',4',5-TETRACB (PCB-70) (13C12, 99%)	(CAS No) 208263-81-4 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,3,3',5,5'-PENTACB (PCB-111) (13C12, 99%)	(CAS No) 235416-29-2 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,3,3',4,5,5'-HEXACB (PCB-159) (13C12, 99%)	(CAS No) 39635-35-3 (Unlabeled) (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,3',4,4',5-HEPTACB (PCB-170) (13C12, 99%)	(CAS No) 35065-30-6 (Unlabeled) (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Name	Product identifier	%	Classification (GHS-US)
N-NONANE UNLABELED	(CAS No) 111-84-2	50.94 - 96.14	Flam. Liq. 3, H226 Acute Tox. 4 (Inhalation:vapour), H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H336 Asp. Tox. 1, H304
ISOOCTANE UNLABELED	(CAS No) 540-84-1	3.86 - 49.06	Flam. Liq. 1, H224 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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	: Move out of dangerous area. Consult a physician and show this safety data sheet.
First-aid measures after inhalation	: If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.
First-aid measures after skin contact	: Wash with soap and plenty of water. Consult a physician.
First-aid measures after eye contact	: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.
First-aid measures after ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

Symptoms/injuries after inhalation	: Harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness.
Symptoms/injuries after skin contact	: May be harmful if absorbed through the skin. Causes skin irritation.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

### 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	: For small fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
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### 5.2. Special hazards arising from the substance or mixture

Reactivity	: Vapor is explosive with air above.
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### 5.3. Advice for firefighters

- Firefighting instructions : Use water spray to cool unopened containers.  
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.

#### 6.1.1. For non-emergency personnel

- Emergency procedures : Ensure adequate ventilation. Evacuate unnecessary personnel. Evacuate danger area. Special attention should be given to low areas/pits where flammable vapors can accumulate. Use personal protective equipment as required.

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Avoid release to the environment.

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

- For containment : Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. This material and its container must be disposed of in a safe way, and as per local legislation.

### 6.4. Reference to other sections

No additional information available

## 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 : No naked lights. No smoking. Use only non-sparking tools. Use only outdoors or in a well-ventilated area.  
Hygiene measures : Always wash your hands immediately after handling this product, and once again before leaving the workplace. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product.

### 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.  
Storage conditions : Store at room temperature away from light and moisture.  
Incompatible materials : Heat sources.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOCTANE:NONANE		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	200.000000000 ppm Central Nervous System impairment.
2,2',5,5'-TETRACB (PCB-52) (13C12, 99%) (208263-80-3)		
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.500000000 mg/m <sup>3</sup>
2,2',5,5'-TETRACB UNLABELED (35693-99-3)		
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	0.500000000 mg/m <sup>3</sup>
N-NONANE UNLABELED (111-84-2)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	200.000000000 ppm Central Nervous System impairment.

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### 8.2. Exposure controls

Personal protective equipment : Protective clothing. Protective goggles. Self-contained breathing apparatus. Gloves.



Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

## 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	: 128.3 g/mol
Color	: Colorless.
Odor	: No data available
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: No data available
Freezing point	: -53 °C (- 63 °F) - lit
Boiling point	: 151 °C (304 °F) - lit
Flash point	: 31.0 °C (87.8 °F) - closed cup
Self ignition temperature	: 205 °C (401 °F)
Decomposition temperature	: No data available
Flammability (solid, gas)	: Highly flammable liquid and vapor
Vapor pressure	: 12.4 hPa (9.3 mmHg) at 37.7 °C (99.9 °F)
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Density	: 0.718 g/ml
Solubility	: Water: 0 %
Log Pow	: 5.65
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	: 0.87 - 2.9 % (V)

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Vapor is explosive with air above.

### 10.2. Chemical stability

Stable if stored under recommended conditions.

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Open flame. Direct sunlight.

### 10.5. Incompatible materials

Oxidizing agent.



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### 10.6. Hazardous decomposition products

May release flammable gases.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Harmful if inhaled.

EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE	
ATE (dust, mist)	1.500 mg/l/4h

N-NONANE UNLABELED (111-84-2)	
LC50 inhalation rat (mg/l)	23760 mg/m <sup>3</sup> male - 4 h
LC50 inhalation rat (ppm)	3200 ppm/4h
ATE (gases)	3200.000 ppmV/4h
ATE (vapors)	11.000 mg/l/4h
ATE (dust, mist)	23.760 mg/l/4h

Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: May be fatal if swallowed and enters airways.
Potential Adverse human health effects and symptoms	: Harmful if inhaled.
Symptoms/injuries after inhalation	: Harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness and dizziness.
Symptoms/injuries after skin contact	: May be harmful if absorbed through the skin. Causes skin irritation.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

## SECTION 12: Ecological information

### 12.1. Toxicity

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

2,2',5,5'-TETRACB (PCB-52) (13C12, 99%) (208263-80-3)	
LC50 fish 1	>= 0.002 mg/l Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	>= 0.002 mg/l Daphnia magna (Water flea) - 48 h
NOEC (chronic)	0.1 mg/l Oncorhynchus mykiss (rainbow trout) - 7 d

2,2',5,5'-TETRACB UNLABELED (35693-99-3)	
LC50 fish 1	Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	Daphnia magna (Water flea) - 48 h
NOEC (chronic)	0.1 mg/l Oncorhynchus mykiss (rainbow trout) - 7 d

2,4,4'-TRICB (PCB-28) (13C12, 99%) (208263-76-7)	
LC50 fish 1	> 0.16 mg/l Pimephales promelas (fathead minnow) -96h
EC50 Daphnia 1	> 0.16 mg/l Daphnia magna (Water flea) -48h

2,4,4'-TRICB UNLABELED (7012-37-5)	
LC50 fish 1	> 0.16 mg/l Pimephales promelas (fathead minnow) - 96h
EC50 Daphnia 1	> 0.16 mg/l Daphnia magna (Water flea) - 48h

2,2',4,4',5,5'-HEXACB UNLABELED (35065-27-1)	
LC50 fish 1	Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	Daphnia magna (Water flea) - 48 h



# EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE EC-5385

## Safety Data Sheet

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<b>2,2',4,4',5,5'-HEXACB (PCB-153) (13C12, 99%) (185376-58-3)</b>	
LC50 fish 1	Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	Daphnia magna (Water flea) - 48 h

<b>2,2',3,3',4,4',5-HEPTACB (PCB-170) (13C12, 99%) (35065-30-6 (Unlabeled))</b>	
LC50 fish 1	0.034 mg/l Pimephales promelas (fathead minnow) - 96 h

### 12.2. Persistence and degradability

<b>EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE</b>	
Persistence and degradability	May cause long-term adverse effects in the environment.

### 12.3. Bioaccumulative potential

<b>EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE</b>	
Log Pow	5.65

<b>2,2',3,4,4',5,5'-HEPTACB (PCB-180) (13C12, 99%) (35065-29-3 (Unlabeled))</b>	
Log Pow	8.27

<b>2,2',4,4',5,5'-HEXACB (PCB-153) (13C12, 99%) (185376-58-3)</b>	
Log Pow	7.75

<b>N-NONANE UNLABELED (111-84-2)</b>	
Log Pow	5.65
Bioaccumulative potential	Indication of bioaccumulation.

<b>2,2',3,3',4,4',5-HEPTACB (PCB-170) (13C12, 99%) (35065-30-6 (Unlabeled))</b>	
Log Pow	8.27

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

No additional information available

### 12.6. Other adverse effects

Other adverse effects : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic 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.

## SECTION 14: Transport information

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

### 14.1. UN number

UN-No.(DOT) : 1920  
DOT NA no. UN1920

### 14.2. UN proper shipping name

DOT Proper Shipping Name : Nonanes  
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) : III - Minor Danger

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DOT Special Provisions (49 CFR 172.102)	: B1 - If the material has a flash point at or above 38 C (100 F) and below 93 C (200 F), then the bulk packaging requirements of 173.241 of this subchapter are applicable. If the material has a flash point of less than 38 C (100 F), then the bulk packaging requirements of 173.242 of this subchapter are applicable. IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). 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, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T2 - 1.5 178.274(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)	: 203
DOT Packaging Bulk (49 CFR 173.xxx)	: 242
Marine pollutant	: No



### 14.3. Additional information

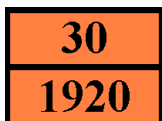
Other information : No supplementary information available.

#### Overland transport

Packing group (ADR)	: III
Class (ADR)	: 3 - Flammable liquid
Hazard identification number (Kemler No.)	: 30
Classification code (ADR)	: F1
Danger labels (ADR)	: 3 - Flammable liquids



Orange plates :



Tunnel restriction code	: D/E
Limited quantities (ADR)	: 5L
EAC	: 3Y
Excepted quantities (ADR)	: E1

#### Transport by sea

DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
MFAG-No	: 128

#### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 60 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 220 L

# EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE EC-5385

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### 14.4. Environmental hazards

Dangerous for the environment :



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

#### EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard
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#### N-NONANE UNLABELED (111-84-2)

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard
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#### ISOOCTANE UNLABELED (540-84-1)

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
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### 15.2. International regulations

#### CANADA

#### EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE

Listed on the Canadian DSL (Domestic Substances List) inventory.

#### 15.2.1. National regulations

No additional information available

### 15.3. US State regulations

#### EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE()

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 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
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#### N-NONANE UNLABELED (111-84-2)

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  
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

#### ISOOCTANE UNLABELED (540-84-1)

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  
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

# EN-1948-4 MARKER PCB CALIBRATION SERIES (CS1-CS6) (UNLABELED/13C12, 99%) IN ISOOCTANE:NONANE EC-5385

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### 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.

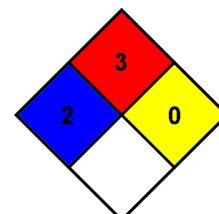
Full text of R-, H- and EUH-phrases::

Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) 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
Asp. Tox. 1	Aspiration hazard Category 1
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Flam. Liq. 2	Flammable liquids Category 2
Flam. Liq. 3	Flammable liquids Category 3
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
H225	Highly flammable liquid and vapor
H226	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
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
R10	Flammable
R11	Highly flammable
R20	Harmful by inhalation
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed
R22	Harmful if swallowed
R33	Danger of cumulative effects
R36/37/38	Irritating to eyes, respiratory system and skin
R38	Irritating to skin
R45	May cause cancer
R48	Danger of serious damage to health by prolonged exposure
R48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
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
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

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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*