



MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/¹³C12, 99%)

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: 05/02/2016

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:

Version: 1.0

EC-5414-CS4

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

1.1. Product identifier

Product form : Mixture
Product name. : MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/¹³C12, 99%)
Product code : EC-5414-CS4

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 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
STOT SE 3	H336
Asp. Tox. 1	H304
Aquatic Chronic 2	H411

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; R51/53

Full text of R-phrases: see section 16

GHS-US classification

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 Chronic 2	H411

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Adverse physicochemical, human health and environmental effects

Central Nervous System.

2.2. Label elements

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

Hazard pictograms (CLP) :



GHS02

GHS07

GHS08

GHS09

Signal word (CLP) :

Danger

Hazard statements (CLP) :

H225 - Highly flammable liquid and vapour
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
H411 - 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 dust, fume, gas, mist, spray, vapours
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 labelling

Hazard pictograms (GHS-US) :



GHS02

GHS07

GHS08

GHS09

Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H225 - Highly flammable liquid and vapour
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
H411 - 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 dust, fume, gas, mist, spray, vapours
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 face protection, eye 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
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)

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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. Mixture

Name	Product identifier	%	Classification according to Directive 67/548/EEC
N-NONANE UNLABELED	(CAS No) 111-84-2 (EC no) 203-913-4	87.896596	R10 Xn; R20 Xn; R65 R67 Xi; R38
ISOCTANE UNLABELED	(CAS No) 540-84-1 (EC no) 208-759-1 (EC index no) 601-009-00-8	12.102523	Xi; R38 N; R50/53 R67 F; R11
4-MONOCB UNLABELED	(CAS No) 2051-62-9 (EC no) 218-127-7	0.00007	Xn; R48/20
2,4'-DICB UNLABELED	(CAS No) 34883-43-7 (EC index no) 602-039-00-4	0.00007	Xn; R48/20/21/22 N; R50/53 R33
2,2',3,3',4,4',5,5'-OCTACB UNLABELED	(CAS No) 35694-08-7	0.00007	Xn; R48/20 N; R50/53
2,2',3,3',4,4',5,5',6-NONACB UNLABELED	(CAS No) 40186-72-9	0.00007	R33
DECACB UNLABELED	(CAS No) 2051-24-3	0.00007	N; R50/53
2,4,4'-TRICB UNLABELED	(CAS No) 7012-37-5 (EC no) 230-293-2	0.000035	Xi; R36/37/38 N; R50/53
2,2',5,5'-TETRACB UNLABELED	(CAS No) 35693-99-3 (EC index no) 602-039-00-4	0.000035	Xn; R22 N; R50/53
2,2',4,5,5'-PENTACB UNLABELED	(CAS No) 37680-73-2	0.000035	R33
2,3',4,4',5-PENTACB UNLABELED	(CAS No) 31508-00-6 (EC no) 215-648-1 (EC index no) 602-039-00-4	0.000035	Xn; R22
2,3,4,4',5-PENTACB UNLABELED	(CAS No) 74472-37-0 (EC index no) 602-039-00-4	0.000035	Xn; R22 N; R50/53
2,2',3,4,4',5'-HEXACB UNLABELED	(CAS No) 35065-28-2	0.000035	N; R50/53 R33
2,2',4,4',5,5'-HEXACB UNLABELED	(CAS No) 35065-27-1 (EC no) 215-648-1	0.000035	R33
2,2',3,4,4',5,5'-HEPTACB UNLABELED	(CAS No) 35065-29-3	0.000035	R33
4-MONOCB (PCB-3) (13C12, 99%)	(CAS No) 208263-77-8 (EC no) 218-127-7	0.000014	N; R50/53
2,4'-DICB (PCB-8) (13C12, 98%)	(CAS No) 34883-43-7 (Unlabeled) (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
2,4,4'-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',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
2,2',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
2,3',4,4',5-PENTACB (PCB-118) (13C12, 98%)	(CAS No) 104130-40-7 (EC no) 215-648-1 (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33
2,3,4,4',5-PENTACB (PCB-114) (13C12, 99%)	(CAS No) 208263-63-2 (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33
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',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
2,2',3,3',4,4'-HEXACB (PCB-128) (13C12, 99%)	(CAS No) 38380-07-3 (Unlabeled) (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33
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
2,4',6-TRICB (PCB-32) (13C12, 99%)	(CAS No) 38444-77-8 (Unlabeled) (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53 R33
DECACB (PCB-209) (13C12, 99%)	(CAS No) 105600-27-9 (EC no) 218-115-1	0.000014	N; R50
2,2',3,3',4,4',5,5',6-NONACB (PCB-206) (13C12, 99%)	(CAS No) 208263-75-6 (EC index no) 602-039-00-4	0.000014	Xn; R48/20/21/22 N; R50/53
2,2',3,3',4,4',5,5'-OCTACB (PCB-194) (13C12, 98%)	(CAS No) 208263-74-5 (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',3,4,4',5,5'-HEPTACB (PCB-180) (13C12, 99%)	(CAS No) 35065-29-3 (Unlabeled)	0.000014	N; R50/53
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	87.896596	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
ISOCTANE UNLABELED	(CAS No) 540-84-1 (EC no) 208-759-1 (EC index no) 601-009-00-8	12.102523	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
4-MONOCB UNLABELED	(CAS No) 2051-62-9 (EC no) 218-127-7	0.00007	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,4'-DICB UNLABELED	(CAS No) 34883-43-7 (EC index no) 602-039-00-4	0.00007	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,3',4,4',5,5'-OCTACB UNLABELED	(CAS No) 35694-08-7	0.00007	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,3',4,4',5,5',6-NONACB UNLABELED	(CAS No) 40186-72-9	0.00007	Carc. 1B, H350 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
DECACB UNLABELED	(CAS No) 2051-24-3	0.00007	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,4,4'-TRICB UNLABELED	(CAS No) 7012-37-5 (EC no) 230-293-2	0.000035	STOT RE 2, H373 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	0.000035	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',4,5,5'-PENTACB UNLABELED	(CAS No) 37680-73-2	0.000035	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,3',4,4',5-PENTACB UNLABELED	(CAS No) 31508-00-6 (EC no) 215-648-1 (EC index no) 602-039-00-4	0.000035	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,3,4,4',5-PENTACB UNLABELED	(CAS No) 74472-37-0 (EC index no) 602-039-00-4	0.000035	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	0.000035	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	0.000035	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	0.000035	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
4-MONOCB (PCB-3) (13C12, 99%)	(CAS No) 208263-77-8 (EC no) 218-127-7	0.000014	Carc. 1B, H350 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,4'-DICB (PCB-8) (13C12, 98%)	(CAS No) 34883-43-7 (Unlabeled) (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',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
2,2',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
2,3',4,4',5-PENTACB (PCB-118) (13C12, 98%)	(CAS No) 104130-40-7 (EC no) 215-648-1 (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,3,4,4',5-PENTACB (PCB-114) (13C12, 99%)	(CAS No) 208263-63-2 (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'-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',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
2,2',3,3',4,4'-HEXACB (PCB-128) (13C12, 99%)	(CAS No) 38380-07-3 (Unlabeled) (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
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

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
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
2,4',6-TRICB (PCB-32) (13C12, 99%)	(CAS No) 38444-77-8 (Unlabeled) (EC index no) 602-039-00-4	0.000014	STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
DECACB (PCB-209) (13C12, 99%)	(CAS No) 105600-27-9 (EC no) 218-115-1	0.000014	Aquatic Acute 1, H400
2,2',3,3',4,4',5,5',6-NONACB (PCB-206) (13C12, 99%)	(CAS No) 208263-75-6 (EC index no) 602-039-00-4	0.000014	Carc. 1B, H350 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
2,2',3,3',4,4',5,5'-OCTACB (PCB-194) (13C12, 98%)	(CAS No) 208263-74-5 (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',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

Name	Product identifier	%	GHS-US classification
N-NONANE UNLABELED	(CAS No) 111-84-2	87.896596	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	12.102523	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	: 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: 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	: Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.
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 after inhalation	: May cause drowsiness or dizziness.
Symptoms/injuries after skin contact	: Causes skin irritation.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: May be fatal if swallowed and enters airways.

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

- Fire hazard : Highly flammable liquid and vapour.
Explosion hazard : May form flammable/explosive vapour-air mixture.
Reactivity : Vapors may form explosive mixture with air.

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 : Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.1.2. For emergency responders

- Protective equipment : Avoid breathing dust, mist or spray.

6.2. Environmental precautions

- Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

- For containment : Contain spillage, then collect with non-combustible absorbent material. Disposal should be in accordance with applicable Federal, State and local regulations.

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 vapours 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. 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 materials : Heat sources.

7.3. Specific end use(s)

- No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	200.000000000 ppm Central Nervous System impairment.
N-NONANE UNLABELED (111-84-2)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	200.000000000 ppm Central Nervous System impairment.
2,2',5,5'-TETRACB UNLABELED (35693-99-3)		
USA OSHA	OSHA PEL (TWA) (mg/m ³)	0.500000000 mg/m ³
2,2',5,5'-TETRACB (PCB-52) (13C12, 99%) (208263-80-3)		
USA OSHA	OSHA PEL (TWA) (mg/m ³)	0.500000000 mg/m ³

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8.2. Exposure controls

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



Hand protection : Wear suitable protective clothing and gloves.

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

Skin and body protection : Wear suitable protective clothing.

Respiratory protection : Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. Wear respiratory protection.

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
Colour	: Colourless.
Odour	: No data available
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=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 vapour
Vapour pressure	: 12.4 hPa (9.3 mmHg) at 37.7 °C (99.9 °F)
Relative vapour 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
Oxidising 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

Vapors may form explosive mixture with air.

10.2. Chemical stability

See storage and expiration date on CoA.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Open flame. Direct sunlight.

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10.5. Incompatible materials

Strong oxidizing agents.

10.6. Hazardous decomposition products

May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if inhaled.

MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)	
LC50 inhalation rat (mg/l)	23760 mg/m ³ male - 4 h
LC50 inhalation rat (ppm)	3200 ppm/4h
ATE (gases)	4500.000 ppmV/4h
ATE (vapours)	11.000 mg/l/4h
ATE (dust,mist)	1.500 mg/l/4h

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

Skin corrosion/irritation	: Causes skin irritation. Skin - rat - Skin irritation - Draize test
Serious eye damage/irritation	: Causes serious eye irritation. No data available
Respiratory or skin sensitisation	: Not available No data available
Germ cell mutagenicity	: Not available
Carcinogenicity	: Not classified
Reproductive toxicity	: Not available
Specific target organ toxicity (single exposure)	: May cause drowsiness or dizziness. May cause drowsiness or dizziness.
Specific target organ toxicity (repeated exposure)	: Not classified No data available
Aspiration hazard	: May be fatal if swallowed and enters airways.
Potential Adverse human health effects and symptoms	: The chemical, physical, and toxicological properties have not been thoroughly investigated.
Symptoms/injuries after inhalation	: May cause drowsiness or dizziness.
Symptoms/injuries after skin contact	: Causes skin irritation.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: May be fatal if swallowed and enters airways.

SECTION 12: Ecological information

12.1. Toxicity

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

4-MONOCB UNLABELED (2051-62-9)	
LC50 fishes 1	0.72 mg/l Oncorhynchus mykiss (rainbow trout) - 96 h
EC50 Daphnia 1	0.42 mg/l Daphnia magna (Water flea) - 48 h

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

2,2',5,5'-TETRACB UNLABELED (35693-99-3)	
LC50 fishes 1	Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	Daphnia magna (Water flea) - 48 h

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2,2',5,5'-TETRACB UNLABELED (35693-99-3)	
NOEC (chronic)	0.1 mg/l Oncorhynchus mykiss (rainbow trout) - 7 d
2,2',4,4',5,5'-HEXACB UNLABELED (35065-27-1)	
LC50 fishes 1	Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	Daphnia magna (Water flea) - 48 h
4-MONOCB (PCB-3) (13C12, 99%) (208263-77-8)	
LC50 fishes 1	0.72 mg/l Oncorhynchus mykiss (rainbow trout) - 96 h
EC50 Daphnia 1	0.42 mg/l Daphnia magna (Water flea) - 48 h
2,4,4'-TRICB (PCB-28) (13C12, 99%) (208263-76-7)	
LC50 fishes 1	> 0.16 mg/l Pimpephale promelas (fathead minnow) -96h
EC50 Daphnia 1	> 0.16 mg/l Daphnia magna (Water flea) -48h
2,2',5,5'-TETRACB (PCB-52) (13C12, 99%) (208263-80-3)	
LC50 fishes 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',3,3',4,4',5-HEPTACB (PCB-170) (13C12, 99%) (35065-30-6 (Unlabeled))	
LC50 fishes 1	0.034 mg/l Pimephales promelas (fathead minnow) - 96 h
2,2',4,4',5,5'-HEXACB (PCB-153) (13C12, 99%) (185376-58-3)	
LC50 fishes 1	Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	Daphnia magna (Water flea) - 48 h
12.2. Persistence and degradability	
MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)	
Persistence and degradability	May cause long-term adverse effects in the environment.
2,4'-DICB (PCB-8) (13C12, 98%) (34883-43-7 (Unlabeled))	
Persistence and degradability	Not available.
2,2',3,3',4,4'-HEXACB (PCB-128) (13C12, 99%) (38380-07-3 (Unlabeled))	
Persistence and degradability	Not available.
2,4',6-TRICB (PCB-32) (13C12, 99%) (38444-77-8 (Unlabeled))	
Persistence and degradability	Not available.
12.3. Bioaccumulative potential	
MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)	
Log Pow	5.65
Bioaccumulative potential	Indication of bioaccumulation.
4-MONOCB UNLABELED (2051-62-9)	
BCF fish 1	>= 0.5 mg/l Oryzias latipes - 20 d
Bioconcentration factor (BCF REACH)	>= 54
2,4'-DICB UNLABELED (34883-43-7)	
Log Pow	5.242
N-NONANE UNLABELED (111-84-2)	
Log Pow	5.65
Bioaccumulative potential	Indication of bioaccumulation.
2,3',4,4',5-PENTACB UNLABELED (31508-00-6)	
Log Pow	7.12
2,4'-DICB (PCB-8) (13C12, 98%) (34883-43-7 (Unlabeled))	
Log Pow	5.242
Bioaccumulative potential	Not available.
2,3',4,4',5-PENTACB (PCB-118) (13C12, 98%) (104130-40-7)	
Log Pow	7.12
2,2',3,3',4,4',5-HEPTACB (PCB-170) (13C12, 99%) (35065-30-6 (Unlabeled))	
Log Pow	8.27

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2,2',3,3',4,4'-HEXACB (PCB-128) (13C12, 99%) (38380-07-3 (Unlabeled))	
Bioaccumulative potential	Not available.

2,4',6-TRICB (PCB-32) (13C12, 99%) (38444-77-8 (Unlabeled))	
Bioaccumulative potential	Not available.

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

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

12.4. Mobility in soil

2,4'-DICB (PCB-8) (13C12, 98%) (34883-43-7 (Unlabeled))	
Ecology - soil	Not available.

2,2',3,3',4,4'-HEXACB (PCB-128) (13C12, 99%) (38380-07-3 (Unlabeled))	
Ecology - soil	Not available.

2,4',6-TRICB (PCB-32) (13C12, 99%) (38444-77-8 (Unlabeled))	
Ecology - soil	Not available.

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Other adverse effects : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. 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.

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

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

Ecology - waste materials : Hazardous waste due to toxicity.

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

14.3. Additional information

Other information : No supplementary information available.

Overland transport

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



Orange plates : An orange rectangular label with a black border. It is divided into two horizontal sections. The top section contains the number '30' and the bottom section contains the number '1920'.

Tunnel restriction code	: D/E
Limited quantities (ADR)	: 5L
EAC code	: 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
Civil Aeronautics Law	: Flammable liquids(Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)

14.4. Environmental hazards

Dangerous for the environment : A white diamond-shaped hazard label with a black border. Inside the diamond, there is a black icon of a tree and a fish, representing environmental hazards.

Other information : No supplementary information available.

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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-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)

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

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

CANADA

MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)

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

15.2.1. National regulations

No additional information available

15.3. US State regulations

MONO-DECA + PREDOMINANT PCB CALIBRATION SOLUTION CS4 (UNLABELED/13C12, 99%)()

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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ISOCTANE 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.

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.

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)	Acute toxicity (inhal.), Category 4
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Acute Tox. 4 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — AcuteHazard, 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
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1B	Carcinogenicity, Category 1B
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, Narcosis
H225	Highly flammable liquid and vapour
H226	Flammable liquid and vapour
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
H350	May cause cancer
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
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	Harmful: danger of serious damage to health by prolonged exposure through inhalation
R48/20/21/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed
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
R65	Harmful: may cause lung damage if swallowed
R67	Vapours may cause drowsiness and dizziness
F	Highly flammable
N	Dangerous for the environment
Xi	Irritant
Xn	Harmful

NFPA health hazard

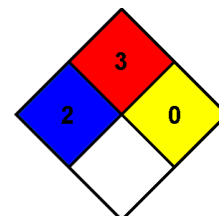
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

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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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