

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: 23/11/2015 Revision date:

EO-5506

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

Product identifier

Product form : Mixture

: PBDE SURROGATE STANDARD (13C12, 99%) 200 NG/ML IN NONANE Product name

Product code : EO-5506

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

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

Classification of the substance or mixture

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

Flam. Liq. 3 H226 Acute Tox. 4 (Inhalation) H332 Skin Irrit. 2 H315 Eve Irrit. 2 H319 STOT SE 3 H336 H304 Asp. Tox. 1

Full text of H-phrases: see section 16

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

Xn; R20 Xn; R65 Xi; R38 R10 Xi; R36 Xi; R37

Full text of R-phrases: see section 16

GHS-US classification

Flam. Liq. 3 H226 Acute Tox. 4 (Inhalation) H332 Skin Irrit. 2 H315 Eye Irrit. 2A H319 STOT SE 3 H336 H304 Asp. Tox. 1

Adverse physicochemical, human health and environmental effects

Central Nervous System.

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Label elements

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

Hazard pictograms (CLP)







: Danger

GHS08

GHS07

Signal word (CLP)

Hazard statements (CLP) : 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

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Precautionary statements (CLP)

smoking

P233 - Keep container tightly closed

P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof electrical 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 P280 - Wear protective clothing, protective gloves

GHS-US labelling

Hazard pictograms (GHS-US)







GHS08

GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) 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

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 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

P280 - Wear protective clothing, protective gloves

P301+P310 - IF SWALLOWED: immediately call a POISON CENTER or doctor/physician

P302+P352 - IF ON SKIN: Wash with plenty of soap and water

P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable

for breathing

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

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 Use personal protective equipment as required for extinction

P403+P233 - Store in a well-ventilated place. Keep container tightly closed

P403+P235 - Store in a well-ventilated place. Keep cool

P405 - Store locked up

P501 - Dispose of contents/container to Comply with applicable regulations.

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2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixture

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	99.9999443	R10 Xn; R20 Xn; R65 R67 Xi; R38
2,2',4,4',6-PENTABDE (BDE-100) (13C12, 99%)	(CAS No) 189084-64-8 (Unlabeled)	0.00002786	Carc.Cat.1; R45 Carc.Cat.1; R49 Xn; R22 Xi; R41 Xi; R37 Xi; R38 N; R51/53
2,2',3,4,4',5',6-HEPTABDE (BDE-183) (13C12, 99%)	(CAS No) 207122-16-5 (Unlabeled)	0.00002786	Carc.Cat.1; R45 Carc.Cat.1; R49 Xn; R22 Xi; R41 Xi; R37 Xi; R38 N; R51/53
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	99.9999443	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
2,2',4,4',6-PENTABDE (BDE-100) (13C12, 99%)	(CAS No) 189084-64-8 (Unlabeled)	0.00002786	Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 1A, H350 STOT SE 3, H336 Aquatic Chronic 2, H411
2,2',3,4,4',5',6-HEPTABDE (BDE-183) (13C12, 99%)	(CAS No) 207122-16-5 (Unlabeled)	0.00002786	Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 1A, H350 STOT SE 3, H336 Aquatic Chronic 2, H411
Name	Product identifier	%	GHS-US classification
N-NONANE UNLABELED	(CAS No) 111-84-2	99.9999443	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

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 : Wash with soap and plenty of water. Consult a physician.

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First-aid measures after eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical

First-aid measures after ingestion Immediately call a POISON CENTER or doctor/physician.

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.

Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

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.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable liquid and vapour.

: May form flammable/explosive vapour-air mixture. Explosion hazard

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

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.

For non-emergency personnel 6.1.1

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 Avoid breathing dust, mist or spray.

Environmental precautions

Prevent entry to sewers and public waters.

Methods and material for containment and cleaning up 6.3.

For containment : Contain spillage, then collect with non-combustible absorbent material. Disposal should be in

accordance with applicable Federal, State and local regulations.

Reference to other sections

No additional information available

SECTION 7: Handling and storage

Precautions for safe handling

Additional hazards when processed : Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of

ignition - No smoking. Take measures to prevent build up of electrostatic charge.

Handle in accordance with good industrial hygiene and safety practice. Wash hands before Hygiene measures

breaks and at the end of workday.

Conditions for safe storage, including any incompatibilities

: Store at room temperature away from light and moisture. Storage conditions

Incompatible materials : Heat sources.

Specific end use(s)

No additional information available

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

N-NONANE UNLABELED (111-84-2)

Italy - Portugal - USA ACGIH ACGIH TWA (ppm) 200.0000000000 ppm Central Nervous System impairment

8.2. Exposure controls

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



Hand protection : 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 Colour : Colourless. Odour : No data available Odour threshold No data available 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) : 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

No additional information available

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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. Overheating. Direct sunlight. Heat. Sparks.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if inhaled.

PBDE SURROGATE STANDARD (13C12, 99%) 200 NG/ML IN NONANE	
LC50 inhalation rat (mg/l)	23760 mg/m³ 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/m³ 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
Symptoms/injuries after inhalation

: May cause drowsiness or dizziness.

: The chemical, physical, and toxicological properties have not been thoroughly investigated.

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

No additional information available

12.2. Persistence and degradability

No additional information available

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12.3. Bioaccumulative potential

PBDE SURROGATE STANDARD (13C12, 99%) 200 NG/ML IN NONANE	
Log Pow	5.65
Bioaccumulative potential	Indication of bioaccumulation.

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

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

: 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

Waste disposal recommendations

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

environmental control regulations.

: Dispose of contents/container to ...

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

Hazard labels (DOT)

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 - Flammable liquid



Packing group (DOT)

OT) : III - Minor Danger

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)

: 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

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.

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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

30 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 : 60 L

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 220 L

CFR 175.75)

Civil Aeronautics Law : Flammable liquids(Hazardous materials notice Appended Table 1 Article 194 of the Enforcement

Regulations)

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

PBDE SURROGATE STANDARD (13C12, 99%) 200 NG/ML IN NONANE	
SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard

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

15.2. International regulations

CANADA

PBDE SURROGATE STANDARD (13C12, 99%) 200 NG/ML IN NONANE

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

15.2.1. National regulations

No additional information available

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15.3. US State regulations

PBDE SURROGATE STANDARD (13C12, 99%) 200 NG/ML IN 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.

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
Acute Tox. 4 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) Category 4
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Asp. Tox. 1	Aspiration hazard, Category 1
Carc. 1A	Carcinogenicity, Category 1A
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Sensitisation — Skin, category 1
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Narcosis
H226	Flammable liquid and vapour
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H332	Harmful if inhaled
H336	May cause drowsiness or dizziness
H350	May cause cancer
H411	Toxic to aquatic life with long lasting effects
R10	Flammable
R20	Harmful by inhalation
R22	Harmful if swallowed
R36	Irritating to eyes
R37	Irritating to respiratory system
R38	Irritating to skin
R41	Risk of serious damage to eyes
R45	May cause cancer
R49	May cause cancer by inhalation
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
N	Dangerous for the environment
Xi	Irritant
Xn	Harmful
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NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt

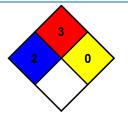
medical attention is given.

NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all

ambient conditions.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions,

and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability : 3 Serious Hazard
Physical : 0 Minimal Hazard

CIL Mixture SDS

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

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