

SAFETY DATA SHEET



3mm sample kit - sw/bb, Part Number 190350508

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

This product is considered an article. This Safety Data Sheet is written based on the encapsulated substance or mixture in this article.

1.1 Product identifier

Product name	: 3mm sample kit - sw/bb, Part Number 190350508		
Part No. (Kit)	: 190350508		
Part No.	: 4Hz 1% H ₂ O/D ₂ O	190350601	
	1H S/N	190350670	
	19F S/N	190350682	
	15N S/N	190350683	
	31P S/N	190350687	
	1H Lineshape	190350689	
	13C S/N ASTM doped	190350691	
	13C S/N ASTM	190350669	

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

Identified uses		
Analytical chemistry.		
4Hz 1% H ₂ O/D ₂ O	250	µl
1H S/N	250	µl
19F S/N	250	µl
15N S/N	250	µl
31P S/N	250	µl
1H Lineshape	250	µl
13C S/N ASTM doped	250	µl
13C S/N ASTM	250	µl

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

e-mail address of person responsible for this SDS : pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation) : CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product's directions for use it may present potential health and safety hazards.

2.1 Classification of the substance or mixture

SECTION 2: Hazards identification

Product definition	:	4Hz 1% H2O/D2O	Mixture (encapsulated in article)
		1H S/N	Mixture (encapsulated in article)
		19F S/N	Mixture (encapsulated in article)
		15N S/N	Mixture (encapsulated in article)
		31P S/N	Mixture (encapsulated in article)
		1H Lineshape	Mixture (encapsulated in article)
		13C S/N ASTM doped	Mixture (encapsulated in article)
		13C S/N ASTM	Mixture (encapsulated in article)

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

1H S/N

H302	ACUTE TOXICITY (oral) - Category 4
H315	SKIN CORROSION/IRRITATION - Category 2
H351	CARCINOGENICITY - Category 2
H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
H412	LONG-TERM AQUATIC HAZARD - Category 3

19F S/N

H225	FLAMMABLE LIQUIDS - Category 2
H315	SKIN CORROSION/IRRITATION - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H340	GERM CELL MUTAGENICITY - Category 1B
H350	CARCINOGENICITY - Category 1A
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H304	ASPIRATION HAZARD - Category 1
H412	LONG-TERM AQUATIC HAZARD - Category 3

15N S/N

H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H360D	TOXIC TO REPRODUCTION (Unborn child) - Category 1B
H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

31P S/N

H302	ACUTE TOXICITY (oral) - Category 4
H315	SKIN CORROSION/IRRITATION - Category 2
H351	CARCINOGENICITY - Category 2
H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
H412	LONG-TERM AQUATIC HAZARD - Category 3

1H Lineshape

H225	FLAMMABLE LIQUIDS - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H351	CARCINOGENICITY - Category 2
H336	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
H412	LONG-TERM AQUATIC HAZARD - Category 3

13C S/N ASTM doped

H225	FLAMMABLE LIQUIDS - Category 2
H315	SKIN CORROSION/IRRITATION - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H340	GERM CELL MUTAGENICITY - Category 1B
H350	CARCINOGENICITY - Category 1A
H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H412	LONG-TERM AQUATIC HAZARD - Category 3

13C S/N ASTM

H225	FLAMMABLE LIQUIDS - Category 2
H315	SKIN CORROSION/IRRITATION - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H340	GERM CELL MUTAGENICITY - Category 1B
H350	CARCINOGENICITY - Category 1A
H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

SECTION 2: Hazards identification

H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H304	ASPIRATION HAZARD - Category 1
H412	LONG-TERM AQUATIC HAZARD - Category 3

Classification according to Directive 1999/45/EC [DPD]

4Hz 1% H2O/D2O	The product is not classified as dangerous according to Directive 1999/45/EC and its amendments.
1H S/N	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
19F S/N	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
15N S/N	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
31P S/N	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
1H Lineshape	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
13C S/N ASTM doped	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
13C S/N ASTM	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification	:	4Hz 1% H2O/D2O	Not classified.
		1H S/N	Carc. Cat. 3; R40 Xn; R22, R48/20/22 Xi; R38
		19F S/N	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38
		15N S/N	Repr. Cat. 2; R61
		31P S/N	Carc. Cat. 3; R40 Xn; R22, R48/20/22 Xi; R38 R52/53
		1H Lineshape	F; R11 Carc. Cat. 3; R40 Xi; R36 R66, R67
		13C S/N ASTM doped	R10 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/37/38
		13C S/N ASTM	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/37/38
Physical/chemical hazards	:	4Hz 1% H2O/D2O	Not applicable.
		1H S/N	Not applicable.
		19F S/N	Highly flammable.
		15N S/N	Not applicable.
		31P S/N	Not applicable.
		1H Lineshape	Highly flammable.
		13C S/N ASTM doped	Flammable.
		13C S/N ASTM	Highly flammable.

SECTION 2: Hazards identification

Human health hazards	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Not applicable. Limited evidence of a carcinogenic effect. Harmful if swallowed. Harmful: danger of serious damage to health in case of prolonged exposure through inhalation and if swallowed. Irritating to skin. May cause cancer. May cause heritable genetic damage. Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Also harmful: may cause lung damage if swallowed. Irritating to eyes and skin. May cause harm to the unborn child. Limited evidence of a carcinogenic effect. Harmful if swallowed. Harmful: danger of serious damage to health in case of prolonged exposure through inhalation and if swallowed. Irritating to skin. Limited evidence of a carcinogenic effect. Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapours may cause drowsiness and dizziness. May cause cancer. May cause heritable genetic damage. Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Also harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin. May cause cancer. May cause heritable genetic damage. Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Also harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin.
Environmental hazards	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Not applicable. Not applicable. Not applicable. Not applicable. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Not applicable. Not applicable. Not applicable.

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

		
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Signal word	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No signal word. Warning Danger Danger Warning Danger Danger Danger
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Hazard statements	: 4Hz 1% H2O/D2O 1H S/N	No known significant effects or critical hazards. GHS07 - Harmful if swallowed. Causes skin irritation. GHS08 - Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.
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SECTION 2: Hazards identification

19F S/N	<p>GHS02 - Highly flammable liquid and vapour.</p> <p>GHS07 - Causes skin irritation. Causes serious eye irritation.</p> <p>GHS08 - May be fatal if swallowed and enters airways. May cause genetic defects. May cause cancer. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.</p>
15N S/N	<p>GHS07 - Causes serious eye irritation.</p> <p>GHS08 - May damage the unborn child. May cause damage to organs through prolonged or repeated exposure.</p>
31P S/N	<p>GHS07 - Harmful if swallowed. Causes skin irritation.</p> <p>GHS08 - Suspected of causing cancer. May cause damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.</p>
1H Lineshape	<p>GHS02 - Highly flammable liquid and vapour.</p> <p>GHS07 - Causes serious eye irritation. May cause drowsiness or dizziness.</p> <p>GHS08 - Suspected of causing cancer. Harmful to aquatic life with long lasting effects.</p>
13C S/N ASTM doped	<p>GHS02 - Highly flammable liquid and vapour.</p> <p>GHS07 - Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.</p> <p>GHS08 - May cause genetic defects. May cause cancer. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.</p>
13C S/N ASTM	<p>GHS02 - Highly flammable liquid and vapour.</p> <p>GHS07 - Causes skin irritation. May cause respiratory irritation. Causes serious eye irritation.</p> <p>GHS08 - May be fatal if swallowed and enters airways. May cause genetic defects. May cause cancer. Causes damage to organs through prolonged or repeated exposure. Harmful to aquatic life with long lasting effects.</p>

[Precautionary statements](#)

SECTION 2: Hazards identification

Prevention	: 4Hz 1% H2O/D2O 1H S/N	Not applicable. P201 - Obtain special instructions before use. P280 - Wear protective gloves. P273 - Avoid release to the environment. P260 - Do not breathe vapour.
	19F S/N	P201 - Obtain special instructions before use. P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking. P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. P273 - Avoid release to the environment. P260 - Do not breathe vapour.
	15N S/N	P201 - Obtain special instructions before use. P280 - Wear eye or face protection. P260 - Do not breathe vapour.
	31P S/N	P201 - Obtain special instructions before use. P280 - Wear protective gloves. P273 - Avoid release to the environment. P260 - Do not breathe vapour.
	1H Lineshape	P201 - Obtain special instructions before use. P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking. P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. P273 - Avoid release to the environment.
	13C S/N ASTM doped	P201 - Obtain special instructions before use. P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking. P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. P273 - Avoid release to the environment. P260 - Do not breathe vapour.
	13C S/N ASTM	P201 - Obtain special instructions before use. P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking. P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. P273 - Avoid release to the environment. P260 - Do not breathe vapour.
Response	: 4Hz 1% H2O/D2O 1H S/N	Not applicable. P314 - Get medical attention if you feel unwell. P301 + P312 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell.
	19F S/N	P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
	15N S/N	P314 - Get medical attention if you feel unwell. P308 + P313 - IF exposed or concerned: Get medical attention.
	31P S/N	P314 - Get medical attention if you feel unwell. P301 + P312 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell.
	1H Lineshape	P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
	13C S/N ASTM doped	P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

SECTION 2: Hazards identification

		13C S/N ASTM	P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
Storage	:	4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Not applicable. P405 - Store locked up. P235 - Keep cool. P405 - Store locked up. P405 - Store locked up. P235 - Keep cool. P235 - Keep cool. P235 - Keep cool.
Disposal	:	4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazardous ingredients	:	1H S/N (² H)Chloroform 19F S/N (² H ₆)Benzene 15N S/N Formamide di[(² H ₃)Methyl] sulphoxide 31P S/N (² H)Chloroform 1H Lineshape (² H ₆)Acetone Trichloromethane 13C S/N ASTM doped (² H ₆)Benzene 1,4-Dioxane 13C S/N ASTM (² H ₆)Benzene 1,4-Dioxane	
Supplemental label elements	:	4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.

SECTION 2: Hazards identification

13C S/N ASTM Not applicable.

Special packaging requirements

Tactile warning of danger : 4Hz 1% H2O/D2O Not applicable.
 1H S/N Not applicable.
 19F S/N Not applicable.
 15N S/N Not applicable.
 31P S/N Not applicable.
 1H Lineshape Not applicable.
 13C S/N ASTM doped Not applicable.
 13C S/N ASTM Not applicable.

2.3 Other hazards

Other hazards which do not result in classification : 4Hz 1% H2O/D2O None known.
 1H S/N None known.
 19F S/N Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation.
 15N S/N None known.
 31P S/N None known.
 1H Lineshape Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation.
 13C S/N ASTM doped Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation.
 13C S/N ASTM Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation.

SECTION 3: Composition/information on ingredients

This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product's directions for use it may present potential health and safety hazards.

Substance/mixture : 4Hz 1% H2O/D2O Mixture (encapsulated in article)
 1H S/N Mixture (encapsulated in article)
 19F S/N Mixture (encapsulated in article)
 15N S/N Mixture (encapsulated in article)
 31P S/N Mixture (encapsulated in article)
 1H Lineshape Mixture (encapsulated in article)
 13C S/N ASTM doped Mixture (encapsulated in article)
 13C S/N ASTM Mixture (encapsulated in article)

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
1H S/N (² H)Chloroform	EC: 200-663-8 CAS: 865-49-6 Index: 602-006-00-4	>=90	Carc. Cat. 3; R40 Xn; R22, R48/20/22 Xi; R38	Acute Tox. 4, H302 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373	[1] [2]
19F S/N (² H ₆)Benzene	EC: 200-753-7 CAS: 1076-43-3 Index: 601-020-00-8	>=90	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304	[1] [2]
15N S/N Formamide	EC: 200-842-0 CAS: 75-12-7 Index: 616-052-00-8	>=90	Repr. Cat. 2; R61	Repr. 1B, H360D (Unborn child)	[1]
di[(² H ₃)Methyl]	EC: 200-664-3	>=10 -	Not classified.	Eye Irrit. 2, H319	[1]

SECTION 3: Composition/information on ingredients

sulphoxide	CAS: 2206-27-1	<15		STOT RE 2, H373 (kidneys and liver) (oral)	
31P S/N (² H)Chloroform	EC: 200-663-8 CAS: 865-49-6 Index: 602-006-00-4	>=90	Carc. Cat. 3; R40 Xn; R22, R48/20/22 Xi; R38	Acute Tox. 4, H302 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373	[1] [2]
Triphenyl phosphate	EC: 204-112-2 CAS: 115-86-6	>=0.25 - <2.5	N; R50/53	STOT RE 2, H373 STOT RE 2, H373 (nervous system) Aquatic Acute 1, H400 Aquatic Chronic 1, H410	[1]
1H Lineshape (² H ₆)Acetone	EC: 200-662-2 CAS: 666-52-4 Index: 606-001-00-8	>=90	F; R11 Xi; R36 R66, R67	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336 (Narcotic effects)	[1] [2]
Trichloromethane	EC: 200-663-8 CAS: 67-66-3 Index: 602-006-00-4	>=1 - <5	Carc. Cat. 3; R40 Xn; R22, R48/20/22 Xi; R38	Acute Tox. 4, H302 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373	[1] [2]
13C S/N ASTM doped (² H ₆)Benzene	EC: 200-753-7 CAS: 1076-43-3 Index: 601-020-00-8	>=50 - <75	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372	[1] [2]
1,4-Dioxane	EC: 204-661-8 CAS: 123-91-1 Index: 603-024-00-5	>=35 - <50	F; R11 R19 Carc. Cat. 3; R40 Xi; R36/37 R66	Asp. Tox. 1, H304 Flam. Liq. 2, H225 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 (Respiratory tract irritation)	[1] [2]
13C S/N ASTM (² H ₆)Benzene	EC: 200-753-7 CAS: 1076-43-3 Index: 601-020-00-8	>=50 - <75	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372	[1] [2]
1,4-Dioxane	EC: 204-661-8 CAS: 123-91-1 Index: 603-024-00-5	>=35 - <50	F; R11 R19 Carc. Cat. 3; R40 Xi; R36/37 R66	Asp. Tox. 1, H304 Flam. Liq. 2, H225 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 (Respiratory tract irritation)	[1] [2]
			See Section 16 for the full text of the R-phrases declared above.	See Section 16 for the full text of the H statements declared above.	

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

SECTION 3: Composition/information on ingredients

- [1] Substance classified with a health or environmental hazard
 [2] Substance with a workplace exposure limit
 [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
 [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
 [5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures**4.1 Description of first aid measures**

Eye contact	: 4Hz 1% H2O/D2O	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
	1H S/N	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	19F S/N	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	15N S/N	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell.
	31P S/N	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	1H Lineshape	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	13C S/N ASTM doped	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	13C S/N ASTM	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	: 4Hz 1% H2O/D2O	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
	1H S/N	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
	19F S/N	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

SECTION 4: First aid measures

15N S/N	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
31P S/N	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
1H Lineshape	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
13C S/N ASTM doped	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
13C S/N ASTM	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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Skin contact	: 4Hz 1% H2O/D2O	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
	1H S/N	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	19F S/N	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	15N S/N	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	31P S/N	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	1H Lineshape	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	13C S/N ASTM doped	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	13C S/N ASTM	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: 4Hz 1% H2O/D2O	Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	1H S/N	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	19F S/N	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small

SECTION 4: First aid measures

	quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
15N S/N	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
31P S/N	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
1H Lineshape	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
13C S/N ASTM doped	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
13C S/N ASTM	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if

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		any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Protection of first-aiders	: 4Hz 1% H2O/D2O	No action shall be taken involving any personal risk or without suitable training.
	1H S/N	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	19F S/N	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
	15N S/N	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
	31P S/N	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	1H Lineshape	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
	13C S/N ASTM doped	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
	13C S/N ASTM	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed**Potential acute health effects**

SECTION 4: First aid measures

Eye contact	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Causes serious eye irritation. Causes serious eye irritation. Causes eye irritation. Causes serious eye irritation. Causes serious eye irritation. Causes serious eye irritation. Causes serious eye irritation.
Inhalation	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. No known significant effects or critical hazards. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. May cause respiratory irritation. May cause respiratory irritation.
Skin contact	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Causes skin irritation. Causes skin irritation. Defatting to the skin. No known significant effects or critical hazards. Causes skin irritation. Defatting to the skin. May cause skin dryness and irritation. Causes skin irritation. Defatting to the skin. Causes skin irritation. Defatting to the skin.
Ingestion	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Harmful if swallowed. Irritating to mouth, throat and stomach. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach. May be irritating to mouth, throat and stomach. Harmful if swallowed. Irritating to mouth, throat and stomach. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach. Irritating to mouth, throat and stomach. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape	No specific data. Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: irritation watering redness Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: pain or irritation watering
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		13C S/N ASTM doped	redness Adverse symptoms may include the following: pain or irritation watering
		13C S/N ASTM	redness Adverse symptoms may include the following: pain or irritation watering
Inhalation	:	4Hz 1% H2O/D2O	No specific data.
		1H S/N	No specific data.
		19F S/N	No specific data.
		15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
		31P S/N	No specific data.
		1H Lineshape	Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
		13C S/N ASTM doped	Adverse symptoms may include the following: respiratory tract irritation coughing
		13C S/N ASTM	Adverse symptoms may include the following: respiratory tract irritation coughing
Skin contact	:	4Hz 1% H2O/D2O	No specific data.
		1H S/N	Adverse symptoms may include the following: irritation redness
		19F S/N	Adverse symptoms may include the following: irritation redness dryness cracking
		15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
		31P S/N	Adverse symptoms may include the following: irritation redness
		1H Lineshape	Adverse symptoms may include the following: irritation dryness cracking
		13C S/N ASTM doped	Adverse symptoms may include the following: irritation redness dryness cracking
		13C S/N ASTM	Adverse symptoms may include the following: irritation redness dryness cracking

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Ingestion	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No specific data. No specific data. Adverse symptoms may include the following: nausea or vomiting Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations No specific data. No specific data. No specific data. Adverse symptoms may include the following: nausea or vomiting
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4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No specific treatment. No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use dry chemical, CO ₂ , water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire. Use dry chemical, CO ₂ , water spray (fog) or foam. Use dry chemical, CO ₂ , water spray (fog) or foam. Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable extinguishing media	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	None known. None known. Do not use water jet. None known. None known. Do not use water jet. Do not use water jet. Do not use water jet.

SECTION 5: Firefighting measures**5.2 Special hazards arising from the substance or mixture**

Hazards from the substance or mixture	: 4H 1% H2O/D2O	In a fire or if heated, a pressure increase will occur and the container may burst.
	1H S/N	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	19F S/N	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	15N S/N	In a fire or if heated, a pressure increase will occur and the container may burst.
	31P S/N	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	1H Lineshape	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	13C S/N ASTM doped	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	13C S/N ASTM	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous combustion products	: 4H 1% H2O/D2O	No specific data.
	1H S/N	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds carbonyl halides
	19F S/N	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	15N S/N	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides
	31P S/N	Decomposition products may include the following materials:

SECTION 5: Firefighting measures

	carbon dioxide carbon monoxide phosphorus oxides halogenated compounds carbonyl halides
1H Lineshape	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds carbonyl halides
13C S/N ASTM doped	Decomposition products may include the following materials: carbon dioxide carbon monoxide
13C S/N ASTM	Decomposition products may include the following materials: carbon dioxide carbon monoxide

5.3 Advice for firefighters

Special precautions for fire-fighters

: 4Hz 1% H2O/D2O	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
1H S/N	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
19F S/N	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
15N S/N	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
31P S/N	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
1H Lineshape	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
13C S/N ASTM doped	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
13C S/N ASTM	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

: 4Hz 1% H2O/D2O	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
1H S/N	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
19F S/N	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full

SECTION 5: Firefighting measures

	face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
15N S/N	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
31P S/N	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
1H Lineshape	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
13C S/N ASTM doped	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
13C S/N ASTM	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	: 4Hz 1% H2O/D2O	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	1H S/N	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	19F S/N	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	15N S/N	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

SECTION 6: Accidental release measures

31P S/N	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
1H Lineshape	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
13C S/N ASTM doped	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
13C S/N ASTM	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders : 4Hz 1% H2O/D2O	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
1H S/N	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
19F S/N	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
15N S/N	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
31P S/N	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
1H Lineshape	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
13C S/N ASTM doped	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
13C S/N ASTM	If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-

SECTION 6: Accidental release measures

emergency personnel".

6.2 Environmental precautions

: 4Hz 1% H2O/D2O

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

1H S/N

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

19F S/N

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

15N S/N

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

31P S/N

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

1H Lineshape

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

13C S/N ASTM doped

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

13C S/N ASTM

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up**Methods for cleaning up** : 4Hz 1% H2O/D2O

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

1H S/N

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

19F S/N

Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

SECTION 6: Accidental release measures

15N S/N	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
31P S/N	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
1H Lineshape	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
13C S/N ASTM doped	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
13C S/N ASTM	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

Protective measures	: 4Hz 1% H ₂ O/D ₂ O	Put on appropriate personal protective equipment (see Section 8).
	1H S/N	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	19F S/N	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures

SECTION 7: Handling and storage

	against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
15N S/N	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
31P S/N	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
1H Lineshape	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
13C S/N ASTM doped	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
13C S/N ASTM	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions

SECTION 7: Handling and storage

before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not swallow. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

: 4Hz 1% H2O/D2O

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

1H S/N

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

19F S/N

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

15N S/N

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

31P S/N

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

1H Lineshape

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

13C S/N ASTM doped

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

13C S/N ASTM

Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.

Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

SECTION 7: Handling and storage**7.2 Conditions for safe storage, including any incompatibilities**

: 4Hz 1% H2O/D2O

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

1H S/N

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

19F S/N

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

15N S/N

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

31P S/N

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

1H Lineshape

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

13C S/N ASTM doped

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use.

SECTION 7: Handling and storage

13C S/N ASTM

Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

Recommendations	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Industrial applications, Professional applications. Industrial applications, Professional applications.
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Industrial sector specific solutions : Not applicable.

SECTION 8: Exposure controls/personal protection

Since the hazardous ingredient in this article is encapsulated, the risk of exposure by inhalation, ingestion, skin contact and eyes contact is minimum.

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
1H S/N (² H)Chloroform	EU OEL (Europe, 12/2009). Absorbed through skin. Notes: list of indicative occupational exposure limit values TWA: 2 ppm 8 hours. TWA: 10 mg/m ³ 8 hours.
19F S/N (² H ₆)Benzene	EU OEL (Europe, 12/2009). Absorbed through skin. TWA: 1 ppm 8 hours. TWA: 3.25 mg/m ³ 8 hours.
31P S/N (² H)Chloroform	EU OEL (Europe, 12/2009). Absorbed through skin. Notes: list of indicative occupational exposure limit values TWA: 2 ppm 8 hours. TWA: 10 mg/m ³ 8 hours.
1H Lineshape (² H ₆)Acetone	EU OEL (Europe, 12/2009). Notes: list of indicative occupational exposure limit values TWA: 500 ppm 8 hours. TWA: 1210 mg/m ³ 8 hours.
Trichloromethane	EU OEL (Europe, 12/2009). Absorbed through skin. Notes: list of indicative occupational exposure limit values TWA: 10 mg/m ³ 8 hours. TWA: 2 ppm 8 hours.
13C S/N ASTM doped	

SECTION 8: Exposure controls/personal protection

(² H ₆)Benzene	EU OEL (Europe, 12/2009). Absorbed through skin. TWA: 1 ppm 8 hours. TWA: 3.25 mg/m ³ 8 hours.
1,4-Dioxane	EU OEL (Europe, 12/2009). Notes: list of indicative occupational exposure limit values TWA: 73 mg/m ³ 8 hours. TWA: 20 ppm 8 hours.
13C S/N ASTM	
(² H ₆)Benzene	EU OEL (Europe, 12/2009). Absorbed through skin. TWA: 1 ppm 8 hours. TWA: 3.25 mg/m ³ 8 hours.
1,4-Dioxane	EU OEL (Europe, 12/2009). Notes: list of indicative occupational exposure limit values TWA: 73 mg/m ³ 8 hours. TWA: 20 ppm 8 hours.

Recommended monitoring procedures

: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived effect levels

No DNELs available.

Predicted effect concentrations

No PNECs available.

8.2 Exposure controls

Appropriate engineering controls

: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

SECTION 8: Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Refer to European Standard EN 1149 for further information on material and design requirements and test methods.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**Appearance

Physical state	: 4Hz 1% H2O/D2O	Liquid.
	1H S/N	Liquid.
	19F S/N	Liquid.
	15N S/N	Liquid.
	31P S/N	Liquid.
	1H Lineshape	Liquid.
	13C S/N ASTM doped	Liquid.
	13C S/N ASTM	Liquid.
Colour	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Colourless.
Odour	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
Odour threshold	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
pH	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.

SECTION 9: Physical and chemical properties

Melting point/freezing point	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	-64°C
	19F S/N	5°C
	15N S/N	Not available.
	31P S/N	-64°C
	1H Lineshape	-95°C
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	6.8°C
Initial boiling point and boiling range	: 4Hz 1% H2O/D2O	101.4°C
	1H S/N	60.9°C
	19F S/N	80°C
	15N S/N	Not available.
	31P S/N	62°C
	1H Lineshape	55.5°C
	13C S/N ASTM doped	90°C
	13C S/N ASTM	79.1°C
Flash point	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Closed cup: -11.11°C
	15N S/N	Closed cup: 87.8°C
	31P S/N	Not available.
	1H Lineshape	Closed cup: -17°C
	13C S/N ASTM doped	Closed cup: 21.1°C
	13C S/N ASTM	Closed cup: -18 to 23°C
Evaporation rate	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
Flammability (solid, gas)	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
Upper/lower flammability or explosive limits	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Lower: 1.3% Upper: 8%
Vapour pressure	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	22.1 kPa [room temperature]

SECTION 9: Physical and chemical properties

Vapour density	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	2.77 [Air = 1]
Relative density	: 4Hz 1% H2O/D2O	1.107
	1H S/N	1.5
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	0.872
	13C S/N ASTM doped	0.98
	13C S/N ASTM	0.95
Solubility(ies)	: 4Hz 1% H2O/D2O	Easily soluble in the following materials: cold water and hot water.
	1H S/N	Very slightly soluble in the following materials: cold water and hot water.
	19F S/N	Insoluble in the following materials: cold water and hot water.
	15N S/N	Soluble in the following materials: cold water and hot water.
	31P S/N	Very slightly soluble in the following materials: cold water and hot water.
	1H Lineshape	Easily soluble in the following materials: cold water, hot water and acetone.
	13C S/N ASTM doped	Easily soluble in the following materials: cold water and hot water.
	13C S/N ASTM	Easily soluble in the following materials: cold water and hot water.
Partition coefficient: n-octanol/water	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
Auto-ignition temperature	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
Decomposition temperature	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.
Viscosity	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	13C S/N ASTM	Not available.

SECTION 9: Physical and chemical properties

	13C S/N ASTM	Not available.
Explosive properties	: 4Hz 1% H2O/D2O	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	31P S/N	Not available.
	1H Lineshape	Vapours may form explosive mixtures with air.
	13C S/N ASTM doped	Slightly explosive in the presence of the following materials or conditions: acids.
	13C S/N ASTM	Slightly explosive in the presence of the following materials or conditions: acids.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: 4Hz 1% H2O/D2O	No specific test data related to reactivity available for this product or its ingredients.
	1H S/N	No specific test data related to reactivity available for this product or its ingredients.
	19F S/N	No specific test data related to reactivity available for this product or its ingredients.
	15N S/N	No specific test data related to reactivity available for this product or its ingredients.
	31P S/N	No specific test data related to reactivity available for this product or its ingredients.
	1H Lineshape	No specific test data related to reactivity available for this product or its ingredients.
	13C S/N ASTM doped	No specific test data related to reactivity available for this product or its ingredients.
	13C S/N ASTM	No specific test data related to reactivity available for this product or its ingredients.
	10.2 Chemical stability	: 4Hz 1% H2O/D2O
1H S/N		The product is stable.
19F S/N		The product is stable.
15N S/N		The product is stable.
31P S/N		The product is stable.
1H Lineshape		The product is stable.
13C S/N ASTM doped		The product is stable.
13C S/N ASTM	The product is stable.	
10.3 Possibility of hazardous reactions	: 4Hz 1% H2O/D2O	Under normal conditions of storage and use, hazardous reactions will not occur.
	1H S/N	Under normal conditions of storage and use, hazardous reactions will not occur.
	19F S/N	Under normal conditions of storage and use, hazardous reactions will not occur.
	15N S/N	Under normal conditions of storage and use, hazardous reactions will not occur.
	31P S/N	Under normal conditions of storage and use, hazardous reactions will not occur.
	1H Lineshape	Under normal conditions of storage and use, hazardous reactions will not occur.
	13C S/N ASTM doped	Under normal conditions of storage and use, hazardous reactions will not occur.
	13C S/N ASTM	Under normal conditions of storage and use, hazardous reactions will not occur.

SECTION 10: Stability and reactivity

10.4 Conditions to avoid	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No specific data. No specific data. Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. No specific data. No specific data. Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
10.5 Incompatible materials	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No specific data. No specific data. Reactive or incompatible with the following materials: oxidizing materials No specific data. No specific data. Reactive or incompatible with the following materials: oxidizing materials Reactive or incompatible with the following materials: oxidizing materials Reactive or incompatible with the following materials: oxidizing materials
10.6 Hazardous decomposition products	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
1H S/N (² H)Chloroform	LC50 Inhalation Vapour	Rat	47702 mg/m ³	4 hours
	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
19F S/N (² H ₆)Benzene	LD50 Oral	Rat	930 mg/kg	-
15N S/N Formamide	LD50 Dermal	Rabbit	17 g/kg	-
	LD50 Oral	Rat	4000 mg/kg	-

SECTION 11: Toxicological information

di[(² H ₃)Methyl] sulphoxide	LD50 Dermal LD50 Oral	Rat Rat	40000 mg/kg 14500 mg/kg	- -
31P S/N (² H)Chloroform	LC50 Inhalation Vapour LD50 Dermal LD50 Oral	Rat Rabbit Rat	47702 mg/m ³ >20 g/kg 300 mg/kg	4 hours - -
Triphenyl phosphate	LD50 Dermal LD50 Oral	Rabbit Rat	>7900 mg/kg 3500 mg/kg	- -
1H Lineshape (² H ₆)Acetone Trichloromethane	LD50 Oral LC50 Inhalation Vapour LD50 Dermal LD50 Oral	Rat Rat Rabbit Rat	5800 mg/kg 47702 mg/m ³ >20 g/kg 300 mg/kg	- 4 hours - -
13C S/N ASTM doped (² H ₆)Benzene 1,4-Dioxane	LD50 Oral LD50 Oral	Rat Rat	930 mg/kg 4200 mg/kg	- -
13C S/N ASTM (² H ₆)Benzene 1,4-Dioxane	LD50 Oral LD50 Oral	Rat Rat	930 mg/kg 4200 mg/kg	- -

Acute toxicity estimates

Route	ATE value
1H S/N Oral	500.5 mg/kg
31P S/N Oral	505.4 mg/kg
1H Lineshape Oral	50000 mg/kg

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
1H S/N (² H)Chloroform	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
19F S/N (² H ₆)Benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
15N S/N Formamide	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
di[(² H ₃)Methyl] sulphoxide	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	100	-

SECTION 11: Toxicological information

31P S/N (² H)Chloroform	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
1H Lineshape (² H ₆)Acetone	Eyes - Mild irritant	Human	-	186300 parts per million	-
	Eyes - Mild irritant	Rabbit	-	10 microliters	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Trichloromethane	Skin - Mild irritant	Rabbit	-	395 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
13C S/N ASTM doped (² H ₆)Benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
1,4-Dioxane	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Skin - Mild irritant	Rabbit	-	515 milligrams	-
13C S/N ASTM (² H ₆)Benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
1,4-Dioxane	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Skin - Mild irritant	Rabbit	-	515 milligrams	-

Sensitiser

Conclusion/Summary : Not available.

Chronic toxicity / Carcinogenicity / Mutagenicity / Teratogenicity / Reproductive toxicity

Not available.

Specific target organ toxicity (single exposure)

SECTION 11: Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
1H Lineshape (² H ₆)Acetone	Category 3	Not applicable.	Narcotic effects
13C S/N ASTM doped 1,4-Dioxane	Category 3	Not applicable.	Respiratory tract irritation
13C S/N ASTM 1,4-Dioxane	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
1H S/N (² H)Chloroform	Category 2	Not determined	Not determined
19F S/N (² H ₆)Benzene	Category 1	Not determined	Not determined
15N S/N di[(² H ₃)Methyl] sulphoxide	Category 2	Oral	kidneys and liver
31P S/N (² H)Chloroform Triphenyl phosphate	Category 2 Category 2	Not determined Not determined	Not determined nervous system
1H Lineshape Trichloromethane	Category 2	Not determined	Not determined
13C S/N ASTM doped (² H ₆)Benzene	Category 1	Not determined	Not determined
13C S/N ASTM (² H ₆)Benzene	Category 1	Not determined	Not determined

Aspiration hazard

Product/ingredient name	Result
19F S/N (² H ₆)Benzene	ASPIRATION HAZARD - Category 1
13C S/N ASTM doped (² H ₆)Benzene	ASPIRATION HAZARD - Category 1
13C S/N ASTM (² H ₆)Benzene	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Inhalation	: 4Hz 1% H ₂ O/D ₂ O 1H S/N	No known significant effects or critical hazards. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
	19F S/N 15N S/N	No known significant effects or critical hazards. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
	31P S/N	Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
	1H Lineshape	Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. Exposure to decomposition

SECTION 11: Toxicological information

	13C S/N ASTM doped 13C S/N ASTM	products may cause a health hazard. Serious effects may be delayed following exposure. May cause respiratory irritation. May cause respiratory irritation.
Ingestion	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Harmful if swallowed. Irritating to mouth, throat and stomach. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach. May be irritating to mouth, throat and stomach. Harmful if swallowed. Irritating to mouth, throat and stomach. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach. Irritating to mouth, throat and stomach. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.
Skin contact	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Causes skin irritation. Causes skin irritation. Defatting to the skin. No known significant effects or critical hazards. Causes skin irritation. Defatting to the skin. May cause skin dryness and irritation. Causes skin irritation. Defatting to the skin. Causes skin irritation. Defatting to the skin.
Eye contact	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No known significant effects or critical hazards. Causes serious eye irritation. Causes serious eye irritation. Causes eye irritation. Causes serious eye irritation. Causes serious eye irritation. Causes serious eye irritation. Causes serious eye irritation.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N 1H Lineshape 13C S/N ASTM doped 13C S/N ASTM	No specific data. No specific data. No specific data. Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations No specific data. Adverse symptoms may include the following: nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness Adverse symptoms may include the following: respiratory tract irritation coughing Adverse symptoms may include the following: respiratory tract irritation coughing
Ingestion	: 4Hz 1% H2O/D2O 1H S/N 19F S/N 15N S/N 31P S/N	No specific data. No specific data. Adverse symptoms may include the following: nausea or vomiting Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations No specific data.

SECTION 11: Toxicological information

	1H Lineshape	No specific data.
	13C S/N ASTM doped	No specific data.
	13C S/N ASTM	Adverse symptoms may include the following: nausea or vomiting
Skin contact	: 4Hz 1% H2O/D2O	No specific data.
	1H S/N	Adverse symptoms may include the following: irritation redness
	19F S/N	Adverse symptoms may include the following: irritation redness dryness cracking
	15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
	31P S/N	Adverse symptoms may include the following: irritation redness
	1H Lineshape	Adverse symptoms may include the following: irritation dryness cracking
	13C S/N ASTM doped	Adverse symptoms may include the following: irritation redness dryness cracking
	13C S/N ASTM	Adverse symptoms may include the following: irritation redness dryness cracking
Eye contact	: 4Hz 1% H2O/D2O	No specific data.
	1H S/N	Adverse symptoms may include the following: pain or irritation watering redness
	19F S/N	Adverse symptoms may include the following: pain or irritation watering redness
	15N S/N	Adverse symptoms may include the following: irritation watering redness
	31P S/N	Adverse symptoms may include the following: pain or irritation watering redness
	1H Lineshape	Adverse symptoms may include the following: pain or irritation watering redness
	13C S/N ASTM doped	Adverse symptoms may include the following: pain or irritation watering redness
	13C S/N ASTM	Adverse symptoms may include the following: pain or irritation watering redness

[Delayed and immediate effects and also chronic effects from short and long term exposure](#)

SECTION 11: Toxicological informationShort term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

General	: 4Hz 1% H2O/D2O	No known significant effects or critical hazards.
	1H S/N	May cause damage to organs through prolonged or repeated exposure.
	19F S/N	Causes damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
	15N S/N	May cause damage to organs through prolonged or repeated exposure.
	31P S/N	May cause damage to organs through prolonged or repeated exposure.
	1H Lineshape	Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
	13C S/N ASTM doped	Causes damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
	13C S/N ASTM	Causes damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
Carcinogenicity	: 4Hz 1% H2O/D2O	No known significant effects or critical hazards.
	1H S/N	Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
	19F S/N	May cause cancer. Risk of cancer depends on duration and level of exposure.
	15N S/N	No known significant effects or critical hazards.
	31P S/N	Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
	1H Lineshape	Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
	13C S/N ASTM doped	May cause cancer. Risk of cancer depends on duration and level of exposure.
	13C S/N ASTM	May cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	: 4Hz 1% H2O/D2O	No known significant effects or critical hazards.
	1H S/N	No known significant effects or critical hazards.
	19F S/N	May cause genetic defects.
	15N S/N	No known significant effects or critical hazards.
	31P S/N	No known significant effects or critical hazards.
	1H Lineshape	No known significant effects or critical hazards.
	13C S/N ASTM doped	May cause genetic defects.
	13C S/N ASTM	May cause genetic defects.
Teratogenicity	: 4Hz 1% H2O/D2O	No known significant effects or critical hazards.
	1H S/N	No known significant effects or critical hazards.
	19F S/N	No known significant effects or critical hazards.
	15N S/N	May damage the unborn child.
	31P S/N	No known significant effects or critical hazards.
	1H Lineshape	No known significant effects or critical hazards.
	13C S/N ASTM doped	No known significant effects or critical hazards.
	13C S/N ASTM	No known significant effects or critical hazards.

SECTION 11: Toxicological information

Developmental effects : 4Hz 1% H2O/D2O No known significant effects or critical hazards.
 1H S/N No known significant effects or critical hazards.
 19F S/N No known significant effects or critical hazards.
 15N S/N No known significant effects or critical hazards.
 31P S/N No known significant effects or critical hazards.
 1H Lineshape No known significant effects or critical hazards.
 13C S/N ASTM doped No known significant effects or critical hazards.
 13C S/N ASTM No known significant effects or critical hazards.

Fertility effects : 4Hz 1% H2O/D2O No known significant effects or critical hazards.
 1H S/N No known significant effects or critical hazards.
 19F S/N No known significant effects or critical hazards.
 15N S/N No known significant effects or critical hazards.
 31P S/N No known significant effects or critical hazards.
 1H Lineshape No known significant effects or critical hazards.
 13C S/N ASTM doped No known significant effects or critical hazards.
 13C S/N ASTM No known significant effects or critical hazards.

Toxicokinetics

Absorption : 4Hz 1% H2O/D2O Not available.
 1H S/N Not available.
 19F S/N Not available.
 15N S/N Not available.
 31P S/N Not available.
 1H Lineshape Not available.
 13C S/N ASTM doped Not available.
 13C S/N ASTM Not available.

Distribution : 4Hz 1% H2O/D2O Not available.
 1H S/N Not available.
 19F S/N Not available.
 15N S/N Not available.
 31P S/N Not available.
 1H Lineshape Not available.
 13C S/N ASTM doped Not available.
 13C S/N ASTM Not available.

Metabolism : 4Hz 1% H2O/D2O Not available.
 1H S/N Not available.
 19F S/N Not available.
 15N S/N Not available.
 31P S/N Not available.
 1H Lineshape Not available.
 13C S/N ASTM doped Not available.
 13C S/N ASTM Not available.

Elimination : 4Hz 1% H2O/D2O Not available.
 1H S/N Not available.
 19F S/N Not available.
 15N S/N Not available.
 31P S/N Not available.
 1H Lineshape Not available.
 13C S/N ASTM doped Not available.
 13C S/N ASTM Not available.

Other information : Not available.

SECTION 12: Ecological information**12.1 Toxicity**

SECTION 12: Ecological information

Product/ingredient name	Result	Species	Exposure
1H S/N (² H)Chloroform	Acute EC50 13.3 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Acute LC50 81.5 mg/l Marine water	Crustaceans - Penaeus duorarum	48 hours
	Acute LC50 29000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13300 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Chronic EC10 3.61 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Chronic NOEC 6300 µg/l Fresh water	Daphnia - Daphnia magna	21 days
19F S/N (² H ₆)Benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1360000 µg/l Fresh water	Algae - Scenedesmus abundans	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 µl/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic NOEC 1.5 to 5.4 µl/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
15N S/N di[(² H ₃)Methyl] sulphoxide	Acute LC50 25000 ppm Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 34000000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
31P S/N (² H)Chloroform	Acute EC50 13.3 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Acute LC50 81.5 mg/l Marine water	Crustaceans - Penaeus duorarum	48 hours
	Acute LC50 29000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13300 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Chronic EC10 3.61 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Chronic NOEC 6300 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Acute EC50 2000 µg/l	Algae - Pseudokirchneriella subcapitata	96 hours
Triphenyl phosphate	Acute EC50 1000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute EC50 225 µg/l Fresh water	Fish - Oncorhynchus mykiss - Fingerling	96 hours
	Chronic NOEC 55 µg/l Fresh water	Fish - Oncorhynchus mykiss - Fingerling	30 days
1H Lineshape (² H ₆)Acetone	Acute EC50 20.565 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute LC50 6000000 µg/l Fresh water	Crustaceans - Gammarus pulex	48 hours
	Acute LC50 10000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 100000 µg/l Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 4.95 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Chronic NOEC 0.1 ml/L Fresh water	Daphnia - Daphnia magna - Neonate	21 days
Trichloromethane	Acute EC50 13.3 mg/l Fresh water	Algae - Chlamydomonas	72 hours

SECTION 12: Ecological information

13C S/N ASTM doped (² H ₆)Benzene	Acute EC50 2.803 mg/l Fresh water	reinhardtii - Exponential growth phase Crustaceans - Cypris subglobosa	48 hours
	Acute LC50 63800 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 13.3 ppm Fresh water	Fish - Lepomis macrochirus	96 hours
	Chronic EC10 3.61 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
	Chronic NOEC 6300 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1360000 µg/l Fresh water	Algae - Scenedesmus abundans	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
1,4-Dioxane	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
	Acute LC50 6700000 µg/l Marine water	Fish - Menidia beryllina	96 hours
	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1360000 µg/l Fresh water	Algae - Scenedesmus abundans	96 hours
	Acute EC50 9230 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
13C S/N ASTM (² H ₆)Benzene	Acute LC50 21000 µg/l Marine water	Crustaceans - Artemia salina - Nauplii	48 hours
	Acute LC50 5.28 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
	Acute LC50 6700000 µg/l Marine water	Fish - Menidia beryllina	96 hours
	Acute LC50 6700000 µg/l Marine water	Fish - Menidia beryllina	96 hours

12.2 Persistence and degradability

Conclusion/Summary : Not available.

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
1H S/N (² H)Chloroform	1.97	690	high
19F S/N (² H ₆)Benzene	2.13	11	low
15N S/N Formamide di[(² H ₃)Methyl] sulphoxide	-0.82	-	low
	-1.35	3.16	low
31P S/N (² H)Chloroform Triphenyl phosphate	1.97	690	high
	4.63	144	low
1H Lineshape			

SECTION 12: Ecological information

(² H ₆)Acetone	-0.23	-	low
Trichloromethane	1.97	690	high
13C S/N ASTM doped			
(² H ₆)Benzene	2.13	11	low
1,4-Dioxane	-0.42	0.3 to 0.7	low
13C S/N ASTM			
(² H ₆)Benzene	2.13	11	low
1,4-Dioxane	-0.42	0.3 to 0.7	low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

This Safety Data Sheet (EU_English) is written based on the encapsulated substance or mixture in this article. Since the hazardous ingredient is encapsulated, the risk of exposure by inhalation, ingestion, skin contact and eyes contact is minimum.

Regulatory information

ADR/RID / IMDG / IATA : Not regulated.

Additional information : **Remarks**
De minimis quantities

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

Annex XVII - : For use in industrial installations only.

Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

Other EU regulations

Europe inventory : All components are listed or exempted.

Black List Chemicals : Not listed

Priority List Chemicals : Listed

Integrated pollution prevention and control list (IPPC) - Air : Listed

Integrated pollution prevention and control list (IPPC) - Water : Not listed

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
1H S/N (² H)Chloroform	Carc. 2, H351	-	-	-
19F S/N (² H ₆)Benzene	Carc. 1A, H350	Muta. 1B, H340	-	-
15N S/N Formamide	-	-	Repr. 1B, H360D (Unborn child)	-
31P S/N (² H)Chloroform	Carc. 2, H351	-	-	-
1H Lineshape Trichloromethane	Carc. 2, H351	-	-	-
13C S/N ASTM doped (² H ₆)Benzene 1,4-Dioxane	Carc. 1A, H350 Carc. 2, H351	Muta. 1B, H340 -	- -	- -
13C S/N ASTM (² H ₆)Benzene 1,4-Dioxane	Carc. 1A, H350 Carc. 2, H351	Muta. 1B, H340 -	- -	- -

15.2 Chemical Safety Assessment : This product contains substances for which Chemical Safety Assessments might still be required.

SECTION 16: Other information

🔍 Indicates information that has changed from previously issued version.

SECTION 16: Other information

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 PNEC = Predicted No Effect Concentration
 RRN = REACH Registration Number

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
<p>1H S/N Acute Tox. 4, H302 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373 Aquatic Chronic 3, H412</p>	<p>Calculation method Calculation method Calculation method Calculation method Calculation method</p>
<p>19F S/N Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 3, H412</p>	<p>On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Expert judgment Calculation method</p>
<p>15N S/N Eye Irrit. 2, H319 Repr. 1B, H360D (Unborn child) STOT RE 2, H373</p>	<p>Calculation method Calculation method Calculation method</p>
<p>31P S/N Acute Tox. 4, H302 Skin Irrit. 2, H315 Carc. 2, H351 STOT RE 2, H373 Aquatic Chronic 3, H412</p>	<p>Calculation method Calculation method Calculation method Calculation method Calculation method</p>
<p>1H Lineshape Flam. Liq. 2, H225 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H336 (Narcotic effects) Aquatic Chronic 3, H412</p>	<p>On basis of test data Calculation method Calculation method Calculation method Calculation method</p>
<p>13C S/N ASTM doped Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H335 (Respiratory tract irritation) STOT RE 1, H372 Aquatic Chronic 3, H412</p>	<p>On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method</p>
<p>13C S/N ASTM Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H335 (Respiratory tract irritation) STOT RE 1, H372 Asp. Tox. 1, H304</p>	<p>On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Expert judgment</p>

SECTION 16: Other information

Aquatic Chronic 3, H412	Calculation method
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Full text of abbreviated H statements**1H S/N**

H302	Harmful if swallowed.
H315	Causes skin irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

19F S/N

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

15N S/N

H319	Causes serious eye irritation.
H360D (Unborn child)	May damage the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H373 (kidneys and liver) (oral)	May cause damage to organs through prolonged or repeated exposure if swallowed. (kidneys and liver)

31P S/N

H302	Harmful if swallowed.
H315	Causes skin irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H373 (nervous system)	May cause damage to organs through prolonged or repeated exposure. (nervous system)
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

1H Lineshape

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336 (Narcotic effects)	May cause drowsiness or dizziness. (Narcotic effects)
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

13C S/N ASTM doped

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335 (Respiratory tract irritation)	May cause respiratory irritation. (Respiratory tract irritation)
H340	May cause genetic defects.
H350	May cause cancer.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

SECTION 16: Other information**13C S/N ASTM**

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335 (Respiratory tract irritation)	May cause respiratory irritation. (Respiratory tract irritation)
H340	May cause genetic defects.
H350	May cause cancer.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS]**1H S/N**

Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Carc. 2, H351	CARCINOGENICITY - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 2, H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

19F S/N

Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Carc. 1A, H350	CARCINOGENICITY - Category 1A
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 2, H225	FLAMMABLE LIQUIDS - Category 2
Muta. 1B, H340	GERM CELL MUTAGENICITY - Category 1B
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 1, H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

15N S/N

Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Repr. 1B, H360D (Unborn child)	TOXIC TO REPRODUCTION (Unborn child) - Category 1B
STOT RE 2, H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
STOT RE 2, H373 (kidneys and liver) (oral)	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (kidneys and liver) (oral) - Category 2

31P S/N

Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Aquatic Acute 1, H400	ACUTE AQUATIC HAZARD - Category 1
Aquatic Chronic 1, H410	LONG-TERM AQUATIC HAZARD - Category 1
Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Carc. 2, H351	CARCINOGENICITY - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 2, H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
STOT RE 2, H373 (nervous system)	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (nervous system) - Category 2

1H Lineshape

Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Carc. 2, H351	CARCINOGENICITY - Category 2
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 2, H225	FLAMMABLE LIQUIDS - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 2, H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
STOT SE 3, H336 (Narcotic effects)	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

SECTION 16: Other information

13C S/N ASTM doped

Aquatic Chronic 3, H412
 Asp. Tox. 1, H304
 Carc. 1A, H350
 Carc. 2, H351
 Eye Irrit. 2, H319
 Flam. Liq. 2, H225
 Muta. 1B, H340
 Skin Irrit. 2, H315
 STOT RE 1, H372

LONG-TERM AQUATIC HAZARD - Category 3
 ASPIRATION HAZARD - Category 1
 CARCINOGENICITY - Category 1A
 CARCINOGENICITY - Category 2
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 FLAMMABLE LIQUIDS - Category 2
 GERM CELL MUTAGENICITY - Category 1B
 SKIN CORROSION/IRRITATION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

STOT SE 3, H335
 (Respiratory tract irritation)

13C S/N ASTM

Aquatic Chronic 3, H412
 Asp. Tox. 1, H304
 Carc. 1A, H350
 Carc. 2, H351
 Eye Irrit. 2, H319
 Flam. Liq. 2, H225
 Muta. 1B, H340
 Skin Irrit. 2, H315
 STOT RE 1, H372

LONG-TERM AQUATIC HAZARD - Category 3
 ASPIRATION HAZARD - Category 1
 CARCINOGENICITY - Category 1A
 CARCINOGENICITY - Category 2
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 FLAMMABLE LIQUIDS - Category 2
 GERM CELL MUTAGENICITY - Category 1B
 SKIN CORROSION/IRRITATION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

STOT SE 3, H335
 (Respiratory tract irritation)

Full text of abbreviated R phrases

: 4Hz 1% H2O/D2O
 1H S/N

Not applicable.
 R40- Limited evidence of a carcinogenic effect.
 R22- Harmful if swallowed.
 R48/20/22- Harmful: danger of serious damage to health in case of prolonged exposure through inhalation and if swallowed.
 R38- Irritating to skin.
 R11- Highly flammable.
 R45- May cause cancer.
 R46- May cause heritable genetic damage.
 R48/23/24/25- Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.
 R65- Also harmful: may cause lung damage if swallowed.
 R36/38- Irritating to eyes and skin.
 R61- May cause harm to the unborn child.
 R40- Limited evidence of a carcinogenic effect.
 R22- Harmful if swallowed.
 R48/20/22- Harmful: danger of serious damage to health in case of prolonged exposure through inhalation and if swallowed.
 R38- Irritating to skin.
 R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 R52/53- Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
 R11- Highly flammable.
 R40- Limited evidence of a carcinogenic effect.
 R22- Harmful if swallowed.
 R48/20/22- Harmful: danger of serious damage to health in case of prolonged exposure through inhalation and if swallowed.
 R36- Irritating to eyes.
 R38- Irritating to skin.
 R66- Repeated exposure may cause skin dryness or cracking.

19F S/N

15N S/N
 31P S/N

1H Lineshape

SECTION 16: Other information

13C S/N ASTM doped	<p>R67- Vapours may cause drowsiness and dizziness. R11- Highly flammable. R10- Flammable. R19- May form explosive peroxides. R45- May cause cancer. R40- Limited evidence of a carcinogenic effect. R46- May cause heritable genetic damage. R48/23/24/25- Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. R65- Also harmful: may cause lung damage if swallowed. R36/37- Irritating to eyes and respiratory system. R36/38- Irritating to eyes and skin. R36/37/38- Irritating to eyes, respiratory system and skin. R66- Repeated exposure may cause skin dryness or cracking.</p>
13C S/N ASTM	<p>R11- Highly flammable. R19- May form explosive peroxides. R45- May cause cancer. R40- Limited evidence of a carcinogenic effect. R46- May cause heritable genetic damage. R48/23/24/25- Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. R65- Also harmful: may cause lung damage if swallowed. R36/37- Irritating to eyes and respiratory system. R36/38- Irritating to eyes and skin. R36/37/38- Irritating to eyes, respiratory system and skin. R66- Repeated exposure may cause skin dryness or cracking.</p>
<p>Full text of classifications [DSD/DPD] : 4Hz 1% H2O/D2O 1H S/N</p>	<p>Not applicable. Carc. Cat. 3 - Carcinogen category 3 Xn - Harmful Xi - Irritant</p>
19F S/N	<p>F - Highly flammable Carc. Cat. 1 - Carcinogen category 1 Muta. Cat. 2 - Mutagen category 2 T - Toxic Xn - Harmful Xi - Irritant</p>
15N S/N 31P S/N	<p>Repr. Cat. 2 - Toxic to reproduction category 2 Carc. Cat. 3 - Carcinogen category 3 Xn - Harmful Xi - Irritant</p>
1H Lineshape	<p>N - Dangerous for the environment F - Highly flammable Carc. Cat. 3 - Carcinogen category 3 Xn - Harmful Xi - Irritant</p>
13C S/N ASTM doped	<p>F - Highly flammable Carc. Cat. 1 - Carcinogen category 1 Carc. Cat. 3 - Carcinogen category 3 Muta. Cat. 2 - Mutagen category 2 T - Toxic Xn - Harmful Xi - Irritant</p>
13C S/N ASTM	<p>F - Highly flammable Carc. Cat. 1 - Carcinogen category 1 Carc. Cat. 3 - Carcinogen category 3 Muta. Cat. 2 - Mutagen category 2 T - Toxic Xn - Harmful Xi - Irritant</p>

Date of issue/ Date of revision : 29/01/2014

SECTION 16: Other information

Date of previous issue : 10/07/2013.

Version : 3

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