

SAFETY DATA SHEET

3MM PRB SAMPL KIT - INDIRECT DET, Part Number 190350500

Section 1. Identification

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

1.1 Product identifier

Product name : 3MM PRB SAMPL KIT - INDIRECT DET, Part Number 190350500

Part No. (Chemical Kit) : 190350500

Part No. :

4Hz 1% H2O/D2O	190350601
Autotest, no salt	190350606
1H S/N	190350670
19F S/N	190350682
1H Lineshape	190350689
13C S/N ASTM doped	190350691
ID 1	190350696
ID 2	190350697

Validation date : 08/21/2014.

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

Material uses : Analytical chemistry.

4Hz 1% H2O/D2O	250 µl
Autotest, no salt	250 µl
1H S/N	250 µl
19F S/N	250 µl
1H Lineshape	250 µl
13C S/N ASTM doped	250 µl
ID 1	250 µl
ID 2	250 µl

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer : Agilent Technologies, Inc.
 Logistics Center - Americas
 500 Ships Landing Way
 New Castle, Delaware 19720
 800-227-9770

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

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

OSHA/HCS status	: 4Hz 1% H2O/D2O	While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
	Autotest, no salt	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	1H S/N	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	19F S/N	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	1H Lineshape	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	13C S/N ASTM doped	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	ID 1	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
	ID 2	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

Autotest, no salt

H360	TOXIC TO REPRODUCTION (Fertility) - Category 1B
H360	TOXIC TO REPRODUCTION (Unborn child) - Category 1B

1H S/N

H302	ACUTE TOXICITY (oral) - Category 4
H315	SKIN CORROSION/IRRITATION - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
H351	CARCINOGENICITY - Category 2
H335 and H336	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation and Narcotic effects) - Category 3
H373	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

19F S/N

H225	FLAMMABLE LIQUIDS - Category 2
H302	ACUTE TOXICITY (oral) - Category 4
H315	SKIN CORROSION/IRRITATION - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
H340	GERM CELL MUTAGENICITY - Category 1B
H350	CARCINOGENICITY - Category 1A
H335 and H336	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation and Narcotic effects) - Category 3
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H304	ASPIRATION HAZARD - Category 1

1H Lineshape

H225	FLAMMABLE LIQUIDS - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
H351	CARCINOGENICITY - Category 2

Section 2. Hazards identification

H336 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

13C S/N ASTM doped

H225 FLAMMABLE LIQUIDS - Category 2
 H302 ACUTE TOXICITY (oral) - Category 4
 H315 SKIN CORROSION/IRRITATION - Category 2
 H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
 H340 GERM CELL MUTAGENICITY - Category 1B
 H350 CARCINOGENICITY - Category 1A
 H335 and H336 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation and Narcotic effects) - Category 3
 H372 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

ID 1

H302 ACUTE TOXICITY (oral) - Category 4
 H315 SKIN CORROSION/IRRITATION - Category 2
 H319 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
 H351 CARCINOGENICITY - Category 2
 H335 and H336 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation and Narcotic effects) - Category 3
 H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

ID 2

H227 FLAMMABLE LIQUIDS - Category 4
 H320 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2B
 H373 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

2.2 GHS label elements

Hazard pictograms



Signal word

: 4Hz 1% H2O/D2O No signal word.
 Autotest, no salt Danger
 1H S/N Warning
 19F S/N Danger
 1H Lineshape Danger
 13C S/N ASTM doped Danger
 ID 1 Warning
 ID 2 Warning

Hazard statements

: 4Hz 1% H2O/D2O No known significant effects or critical hazards.
 Autotest, no salt H360 - May damage fertility or the unborn child.
 1H S/N H302 - Harmful if swallowed.
 H319 - Causes serious eye irritation.
 H315 - Causes skin irritation.
 H351 - Suspected of causing cancer.
 H335 - May cause respiratory irritation.
 H336 - May cause drowsiness and dizziness.
 H373 - May cause damage to organs through prolonged or repeated exposure.
 19F S/N H225 - Highly flammable liquid and vapor.
 H302 - Harmful if swallowed.
 H319 - Causes serious eye irritation.
 H315 - Causes skin irritation.

Section 2. Hazards identification

	H340 - May cause genetic defects. H350 - May cause cancer. H304 - May be fatal if swallowed and enters airways. H335 - May cause respiratory irritation. H336 - May cause drowsiness and dizziness. H372 - Causes damage to organs through prolonged or repeated exposure. H225 - Highly flammable liquid and vapor. H319 - Causes serious eye irritation. H351 - Suspected of causing cancer. H336 - May cause drowsiness and dizziness. H373 - May cause damage to organs through prolonged or repeated exposure.
1H Lineshape	H225 - Highly flammable liquid and vapor. H319 - Causes serious eye irritation. H351 - Suspected of causing cancer. H336 - May cause drowsiness and dizziness. H373 - May cause damage to organs through prolonged or repeated exposure.
13C S/N ASTM doped	H225 - Highly flammable liquid and vapor. H302 - Harmful if swallowed. H319 - Causes serious eye irritation. H315 - Causes skin irritation. H340 - May cause genetic defects. H350 - May cause cancer. H335 - May cause respiratory irritation. H336 - May cause drowsiness and dizziness. H372 - Causes damage to organs through prolonged or repeated exposure.
ID 1	H302 - Harmful if swallowed. H319 - Causes serious eye irritation. H315 - Causes skin irritation. H351 - Suspected of causing cancer. H335 - May cause respiratory irritation. H336 - May cause drowsiness and dizziness. H373 - May cause damage to organs through prolonged or repeated exposure.
ID 2	H227 - Combustible liquid. H320 - Causes eye irritation. H373 - May cause damage to organs through prolonged or repeated exposure.
<u>Precautionary statements</u>	
Prevention	Not applicable. P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P281 - Use personal protective equipment as required.
4Hz 1% H2O/D2O Autotest, no salt	
1H S/N	P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P281 - Use personal protective equipment as required. P280 - Wear protective gloves. Wear eye or face protection. P271 - Use only outdoors or in a well-ventilated area. P260 - Do not breathe vapor. P270 - Do not eat, drink or smoke when using this product.
19F S/N	P264 - Wash hands thoroughly after handling. P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions

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1H Lineshape

have been read and understood.
 P281 - Use personal protective equipment as required.
 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.
 P242 - Use only non-sparking tools.
 P243 - Take precautionary measures against static discharge.
 P233 - Keep container tightly closed.
 P271 - Use only outdoors or in a well-ventilated area.
 P260 - Do not breathe vapor.
 P270 - Do not eat, drink or smoke when using this product.
 P264 - Wash hands thoroughly after handling.
 P201 - Obtain special instructions before use.
 P202 - Do not handle until all safety precautions have been read and understood.
 P281 - Use personal protective equipment as required.
 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.
 P242 - Use only non-sparking tools.
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 P260 - Do not breathe vapor.
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 P201 - Obtain special instructions before use.
 P202 - Do not handle until all safety precautions have been read and understood.
 P281 - Use personal protective equipment as required.
 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.
 P242 - Use only non-sparking tools.
 P243 - Take precautionary measures against static discharge.
 P233 - Keep container tightly closed.
 P271 - Use only outdoors or in a well-ventilated area.
 P260 - Do not breathe vapor.
 P270 - Do not eat, drink or smoke when using this product.
 P264 - Wash hands thoroughly after handling.

13C S/N ASTM doped

Section 2. Hazards identification

	ID 1	<p>P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P281 - Use personal protective equipment as required. P280 - Wear protective gloves. Wear eye or face protection. P271 - Use only outdoors or in a well-ventilated area. P260 - Do not breathe vapor. P270 - Do not eat, drink or smoke when using this product. P264 - Wash hands thoroughly after handling. P280 - Wear protective gloves. Wear eye or face protection. P210 - Keep away from flames and hot surfaces. - No smoking. P260 - Do not breathe vapor. P264 - Wash hands thoroughly after handling.</p>
<p>Response</p>	<p>: 4Hz 1% H2O/D2O Autotest, no salt</p> <p>1H S/N</p>	<p>Not applicable. P308 + P313 - IF exposed or concerned: Get medical attention. P314 - Get medical attention if you feel unwell. P308 + P313 - IF exposed or concerned: Get medical attention. P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. P302 + P352 + P362-2 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. P332 + P313 - If skin irritation occurs: Get medical attention. P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 - If eye irritation persists: Get medical attention.</p>
	19F S/N	<p>P314 - Get medical attention if you feel unwell. P308 + P313 - IF exposed or concerned: Get medical attention. P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P301 + P310 + P330 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. P302 + P352 + P362-2 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated</p>

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1H Lineshape

clothing.
 P332 + P313 - If skin irritation occurs: Get medical attention.
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 - If eye irritation persists: Get medical attention.
 P314 - Get medical attention if you feel unwell.
 P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 - If eye irritation persists: Get medical attention.

13C S/N ASTM doped

P314 - Get medical attention if you feel unwell.
 P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
 P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.
 P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P302 + P352 + P362-2 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing.
 P332 + P313 - If skin irritation occurs: Get medical attention.
 P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337 + P313 - If eye irritation persists: Get medical attention.

ID 1

P314 - Get medical attention if you feel unwell.
 P308 + P313 - IF exposed or concerned: Get medical attention.
 P304 + P340 + P312 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell.
 P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.

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		<p>P302 + P352 + P362-2 + P363 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse.</p> <p>P332 + P313 - If skin irritation occurs: Get medical attention.</p> <p>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P337 + P313 - If eye irritation persists: Get medical attention.</p> <p>P314 - Get medical attention if you feel unwell.</p> <p>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P337 + P313 - If eye irritation persists: Get medical attention.</p>
	ID 2	<p>Not applicable.</p> <p>P405 - Store locked up.</p> <p>P405 - Store locked up.</p> <p>P405 - Store locked up.</p> <p>P403 - Store in a well-ventilated place.</p> <p>P235 - Keep cool.</p> <p>P405 - Store locked up.</p> <p>P403 - Store in a well-ventilated place.</p> <p>P235 - Keep cool.</p> <p>P405 - Store locked up.</p> <p>P403 - Store in a well-ventilated place.</p> <p>P235 - Keep cool.</p> <p>P405 - Store locked up.</p> <p>P403 - Store in a well-ventilated place.</p> <p>P235 - Keep cool.</p>
Storage	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N	
	1H Lineshape	
	13C S/N ASTM doped	
	ID 1 ID 2	
Disposal	: 4Hz 1% H2O/D2O Autotest, no salt	<p>Not applicable.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p>
	1H S/N	
	19F S/N	
	1H Lineshape	
	13C S/N ASTM doped	
	ID 1	
	ID 2	

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Supplemental label elements	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	None known. None known. None known. Avoid contact with skin and clothing. Wash thoroughly after handling. Avoid contact with skin and clothing. Wash thoroughly after handling. Avoid contact with skin and clothing. Wash thoroughly after handling. None known. None known.
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2.3 Other hazards

Hazards not otherwise classified	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	None known. None known. None known. Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation. Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation. Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation. None known. None known.
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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 Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	Mixture (encapsulated in article) Mixture (encapsulated in article)
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Ingredient name	%	CAS number
Autotest, no salt Methanol (¹³ C)	< 0.1	14742-26-8
1H S/N (² H)Chloroform Ethylbenzene	60 - 100 < 0.1	865-49-6 100-41-4
19F S/N (² H ₆)Benzene	60 - 100	1076-43-3
1H Lineshape (² H ₆)Acetone Trichloromethane	60 - 100 0.1 - 1	666-52-4 67-66-3
13C S/N ASTM doped (² H ₆)Benzene 1,4-Dioxane	30 - 60 30 - 60	1076-43-3 123-91-1

Section 3. Composition/information on ingredients

ID 1 (² H)Chloroform Iodomethane (¹³ C) Trimethyl phosphite	60 - 100 0.1 - 1 0.1 - 1	865-49-6 4227-95-6 121-45-9
ID 2 di[(² H ₃)Methyl] sulphoxide Benzamide (¹⁵ N)	60 - 100 1 - 5	2206-27-1 31656-62-9

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

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.

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

Section 4. First aid measures

4.1 Description of necessary first aid measures

Eye contact	: 4Hz 1% H ₂ O/D ₂ O	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.
	Autotest, no salt	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 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.
	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.
	ID 1	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.
	ID 2	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.

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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.
	Autotest, no salt	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.
	1H S/N	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.
	19F S/N	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.
	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

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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.

ID 1

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.

ID 2

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 following exposure or if feeling unwell. 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.

Skin contact

: 4Hz 1% H₂O/D₂O

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Autotest, no salt

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

Section 4. First aid measures

		clothing before reuse. Clean shoes thoroughly before reuse.
	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 recognized 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.
	1H Lineshape	Wash skin thoroughly with soap and water or use recognized 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 recognized 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.
	ID 1	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.
	ID 2	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. 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.
	Autotest, no salt	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.

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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 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.

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. If necessary, call a poison center or physician. Never

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ID 1	<p>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.</p> <p>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.</p>
ID 2	<p>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 following exposure or if feeling unwell. 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.</p>

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. Causes eye irritation.
Inhalation	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation. 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 and dizziness. May cause respiratory irritation.

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	1H Lineshape	Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
	13C S/N ASTM doped	Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation.
	ID 1	Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
	ID 2	No known significant effects or critical hazards.
Skin contact	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape	No known significant effects or critical hazards. No known significant effects or critical hazards. Causes skin irritation. Causes skin irritation. Defatting to the skin. Defatting to the skin. May cause skin dryness and irritation.
	13C S/N ASTM doped ID 1 ID 2	Causes skin irritation. Defatting to the skin. Causes skin irritation. No known significant effects or critical hazards.
Ingestion	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. Harmful if swallowed. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	19F S/N	Harmful if swallowed. Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.
	1H Lineshape	Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	13C S/N ASTM doped	Harmful if swallowed. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	ID 1	Harmful if swallowed. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	ID 2	May be irritating to mouth, throat and stomach.
<u>Over-exposure signs/symptoms</u>		
Eye contact	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N	No specific data. No specific data. 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
	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

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	ID 1	watering redness Adverse symptoms may include the following: pain or irritation watering redness
	ID 2	Adverse symptoms may include the following: irritation watering redness
Inhalation	: 4Hz 1% H2O/D2O Autotest, no salt	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
	1H S/N	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	19F S/N	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	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 nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	ID 1	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	ID 2	No specific data.

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Skin contact	: 4Hz 1% H2O/D2O	No specific data.	
	Autotest, no salt	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations	
	1H S/N	Adverse symptoms may include the following: irritation redness	
	19F S/N	Adverse symptoms may include the following: irritation redness dryness cracking	
	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	
	ID 1	Adverse symptoms may include the following: irritation redness	
	ID 2	No specific data.	
	Ingestion	: 4Hz 1% H2O/D2O	No specific data.
		Autotest, no salt	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
1H S/N		No specific data.	
19F S/N		Adverse symptoms may include the following: nausea or vomiting	
1H Lineshape		No specific data.	
13C S/N ASTM doped		No specific data.	
ID 1		No specific data.	
ID 2		No specific data.	

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	: 4Hz 1% H2O/D2O	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Autotest, no salt	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	1H S/N	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	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	1H Lineshape	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	Treat symptomatically. Contact poison treatment

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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.

No specific treatment.

No action shall be taken involving any personal risk or without suitable training.

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.

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.

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.

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.

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.

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

Specific treatments

: 4Hz 1% H2O/D2O
Autotest, no salt
1H S/N
19F S/N
1H Lineshape
13C S/N ASTM doped
ID 1
ID 2

Protection of first-aiders

: 4Hz 1% H2O/D2O

Autotest, no salt

1H S/N

19F S/N

1H Lineshape

13C S/N ASTM doped

ID 1

Section 4. First aid measures

ID 2

apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. 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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

: 4Hz 1% H₂O/D₂O
Autotest, no salt
1H S/N
19F S/N
1H Lineshape
13C S/N ASTM doped
ID 1

Use an extinguishing agent suitable for the surrounding fire.
Use an extinguishing agent suitable for the surrounding fire.
Use an extinguishing agent suitable for the surrounding fire.
Use dry chemical, CO₂, water spray (fog) or foam.
Use dry chemical, CO₂, water spray (fog) or foam.
Use dry chemical, CO₂, water spray (fog) or foam.
Use an extinguishing agent suitable for the surrounding fire.
Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media

: 4Hz 1% H₂O/D₂O
Autotest, no salt
1H S/N
19F S/N
1H Lineshape
13C S/N ASTM doped
ID 1
ID 2

None known.
None known.
None known.
Do not use water jet.
Do not use water jet.
Do not use water jet.
None known.
Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards arising from the chemical

: 4Hz 1% H₂O/D₂O
Autotest, no salt
1H S/N
19F S/N
1H Lineshape
13C S/N ASTM doped
ID 1

In a fire or if heated, a pressure increase will occur and the container may burst.
In a fire or if heated, a pressure increase will occur and the container may burst.
In a fire or if heated, a pressure increase will occur and the container may burst.
Highly flammable liquid and vapor. 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.
Highly flammable liquid and vapor. 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.
Highly flammable liquid and vapor. 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.
In a fire or if heated, a pressure increase will occur and the container may burst.

Section 5. Fire-fighting measures

	ID 2	Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/ gas is heavier than air and will spread along the ground. Vapors 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.
Hazardous thermal decomposition products	: Decomposition products may include the following materials: carbon dioxide carbon monoxide sulfur oxides halogenated compounds carbonyl halides	
5.3 Advice for firefighters		
Special protective actions 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.
	Autotest, no salt	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.
	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.
	ID 1	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.
	ID 2	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.

Section 5. Fire-fighting measures

Special protective equipment for fire-fighters	: 4Hz 1% H ₂ O/D ₂ O	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	Autotest, no salt	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	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.
	19F 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.
	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.
	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.
	ID 1	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
	ID 2	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : 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 spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : 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".

6.2 Environmental precautions	: 4Hz 1% H ₂ O/D ₂ O	Avoid dispersal of spilled 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).
	Autotest, no salt	Avoid dispersal of spilled 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 6. Accidental release measures

19F S/N	Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Avoid dispersal of spilled 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 Lineshape	Avoid dispersal of spilled 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).
13C S/N ASTM doped	Avoid dispersal of spilled 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).
ID 1	Avoid dispersal of spilled 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).
ID 2	Avoid dispersal of spilled 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).

6.3 Methods and materials for containment and cleaning up

4Hz 1% H ₂ O/D ₂ O	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.
Autotest, no salt	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.
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.
ID 1	Stop leak if without risk. Move containers from spill area. Dilute with

Section 6. Accidental release measures

ID 2

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. 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 7. Handling and storage

7.1 Precautions for safe handling

Protective measures : 4Hz 1% H₂O/D₂O

Autotest, no salt

1H S/N

19F S/N

Put on appropriate personal protective equipment (see Section 8).

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 ingest. Avoid breathing vapor 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.

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 vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

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 vapor or mist. Do not swallow. 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

Section 7. Handling and storage

1H Lineshape

discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

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 vapor or mist. Do not ingest. 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 vapor or mist. Do not ingest. 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.

ID 1

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 vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. 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.

ID 2

Put on appropriate personal protective equipment

Section 7. Handling and storage

(see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. 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. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene	: 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.	
7.2 Conditions for safe storage, including any incompatibilities	: 4Hz 1% H ₂ O/D ₂ O	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 unlabeled containers. Use appropriate containment to avoid environmental contamination.
	Autotest, no salt	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 unlabeled 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 unlabeled 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

Section 7. Handling and storage

1H Lineshape

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

ID 1

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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

ID 2

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. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 7. Handling and storage

7.3 Specific end use(s)

Recommendations	: 4Hz 1% H2O/D2O	Industrial applications, Professional applications.
	Autotest, no salt	Industrial applications, Professional applications.
	1H S/N	Industrial applications, Professional applications.
	19F S/N	Industrial applications, Professional applications.
	1H Lineshape	Industrial applications, Professional applications.
	13C S/N ASTM doped	Industrial applications, Professional applications.
	ID 1	Industrial applications, Professional applications.
	ID 2	Industrial applications, Professional applications.
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

Ingredient name	Exposure limits
Autotest, no salt Methanol (¹³ C)	ACGIH TLV (United States, 3/2012). Absorbed through skin. TWA: 200 ppm 8 hours. TWA: 262 mg/m ³ 8 hours. STEL: 250 ppm 15 minutes. STEL: 328 mg/m ³ 15 minutes. OSHA PEL 1989 (United States, 3/1989). Absorbed through skin. TWA: 200 ppm 8 hours. TWA: 260 mg/m ³ 8 hours. STEL: 250 ppm 15 minutes. STEL: 325 mg/m ³ 15 minutes. NIOSH REL (United States, 6/2009). Absorbed through skin. TWA: 200 ppm 10 hours. TWA: 260 mg/m ³ 10 hours. STEL: 250 ppm 15 minutes. STEL: 325 mg/m ³ 15 minutes. OSHA PEL (United States, 6/2010). TWA: 200 ppm 8 hours. TWA: 260 mg/m ³ 8 hours.
1H S/N (² H)Chloroform	ACGIH TLV (United States, 3/2012). TWA: 10 ppm 8 hours. TWA: 49 mg/m ³ 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 2 ppm 8 hours. TWA: 9.78 mg/m ³ 8 hours. NIOSH REL (United States, 6/2009). STEL: 2 ppm 60 minutes. STEL: 9.78 mg/m ³ 60 minutes. OSHA PEL (United States, 6/2010). CEIL: 50 ppm CEIL: 240 mg/m ³

Section 8. Exposure controls/personal protection

Ethylbenzene

ACGIH TLV (United States, 3/2012).

TWA: 20 ppm 8 hours.

NIOSH REL (United States, 1/2013).STEL: 545 mg/m³ 15 minutes.

STEL: 125 ppm 15 minutes.

TWA: 435 mg/m³ 10 hours.

TWA: 100 ppm 10 hours.

OSHA PEL (United States, 6/2010).TWA: 435 mg/m³ 8 hours.

TWA: 100 ppm 8 hours.

OSHA PEL 1989 (United States, 3/1989).STEL: 545 mg/m³ 15 minutes.

STEL: 125 ppm 15 minutes.

TWA: 435 mg/m³ 8 hours.

TWA: 100 ppm 8 hours.

19F S/N^{(2)H₆}Benzene**ACGIH TLV (United States, 3/2012).****Absorbed through skin.**

TWA: 0.5 ppm 8 hours.

TWA: 1.6 mg/m³ 8 hours.

STEL: 2.5 ppm 15 minutes.

STEL: 8 mg/m³ 15 minutes.**OSHA PEL 1989 (United States, 3/1989).**

TWA: 1 ppm 8 hours.

STEL: 5 ppm 15 minutes.

OSHA PEL Z2 (United States, 11/2006).

TWA: 10 ppm 8 hours.

CEIL: 25 ppm

AMP: 50 ppm 10 minutes.

NIOSH REL (United States, 6/2009).

TWA: 0.1 ppm 10 hours.

STEL: 1 ppm 15 minutes.

OSHA PEL (United States, 6/2010).

TWA: 1 ppm 8 hours.

STEL: 5 ppm 15 minutes.

1H Lineshape^{(2)H₆}Acetone**ACGIH TLV (United States, 3/2012).**

TWA: 500 ppm 8 hours.

TWA: 1188 mg/m³ 8 hours.

STEL: 750 ppm 15 minutes.

STEL: 1782 mg/m³ 15 minutes.**OSHA PEL 1989 (United States, 3/1989).**

TWA: 750 ppm 8 hours.

TWA: 1800 mg/m³ 8 hours.

STEL: 1000 ppm 15 minutes.

STEL: 2400 mg/m³ 15 minutes.**NIOSH REL (United States, 6/2009).**

TWA: 250 ppm 10 hours.

TWA: 590 mg/m³ 10 hours.**OSHA PEL (United States, 6/2010).**

TWA: 1000 ppm 8 hours.

TWA: 2400 mg/m³ 8 hours.

Trichloromethane

ACGIH TLV (United States, 3/2012).TWA: 49 mg/m³ 8 hours.

TWA: 10 ppm 8 hours.

Section 8. Exposure controls/personal protection

13C S/N ASTM doped
(²H₆)Benzene

NIOSH REL (United States, 1/2013).
STEL: 9.78 mg/m³ 60 minutes.
STEL: 2 ppm 60 minutes.
OSHA PEL (United States, 6/2010).
CEIL: 240 mg/m³
CEIL: 50 ppm
OSHA PEL 1989 (United States, 3/1989).
TWA: 9.78 mg/m³ 8 hours.
TWA: 2 ppm 8 hours.

ACGIH TLV (United States, 3/2012).
Absorbed through skin.
TWA: 0.5 ppm 8 hours.
TWA: 1.6 mg/m³ 8 hours.
STEL: 2.5 ppm 15 minutes.
STEL: 8 mg/m³ 15 minutes.
OSHA PEL 1989 (United States, 3/1989).
TWA: 1 ppm 8 hours.
STEL: 5 ppm 15 minutes.
OSHA PEL Z2 (United States, 11/2006).
TWA: 10 ppm 8 hours.
CEIL: 25 ppm
AMP: 50 ppm 10 minutes.
NIOSH REL (United States, 6/2009).
TWA: 0.1 ppm 10 hours.
STEL: 1 ppm 15 minutes.
OSHA PEL (United States, 6/2010).
TWA: 1 ppm 8 hours.
STEL: 5 ppm 15 minutes.

1,4-Dioxane

OSHA PEL 1989 (United States, 3/1989).
Absorbed through skin.
TWA: 25 ppm 8 hours.
TWA: 90 mg/m³ 8 hours.
NIOSH REL (United States, 1/2013).
CEIL: 1 ppm 30 minutes.
CEIL: 3.6 mg/m³ 30 minutes.
ACGIH TLV (United States, 3/2012).
Absorbed through skin.
TWA: 20 ppm 8 hours.
OSHA PEL (United States, 6/2010).
Absorbed through skin.
TWA: 100 ppm 8 hours.
TWA: 360 mg/m³ 8 hours.

ID 1
(²H)Chloroform

ACGIH TLV (United States, 3/2012).
TWA: 10 ppm 8 hours.
TWA: 49 mg/m³ 8 hours.
OSHA PEL 1989 (United States, 3/1989).
TWA: 2 ppm 8 hours.
TWA: 9.78 mg/m³ 8 hours.
NIOSH REL (United States, 6/2009).
STEL: 2 ppm 60 minutes.
STEL: 9.78 mg/m³ 60 minutes.
OSHA PEL (United States, 6/2010).
CEIL: 50 ppm

Section 8. Exposure controls/personal protection

<p>Iodomethane (¹³ C)</p>	<p>CEIL: 240 mg/m³ ACGIH TLV (United States, 3/2012). Absorbed through skin. TWA: 2 ppm 8 hours. OSHA PEL 1989 (United States, 3/1989). Absorbed through skin. TWA: 2 ppm 8 hours. TWA: 10 mg/m³ 8 hours. NIOSH REL (United States, 6/2009). Absorbed through skin. TWA: 2 ppm 10 hours. TWA: 10 mg/m³ 10 hours. OSHA PEL (United States, 6/2010). Absorbed through skin. TWA: 5 ppm 8 hours. TWA: 28 mg/m³ 8 hours.</p>
<p>Trimethyl phosphite</p>	<p>ACGIH TLV (United States, 3/2012). TWA: 2 ppm 8 hours. TWA: 10 mg/m³ 8 hours. OSHA PEL 1989 (United States, 3/1989). TWA: 2 ppm 8 hours. TWA: 10 mg/m³ 8 hours. NIOSH REL (United States, 1/2013). TWA: 2 ppm 10 hours. TWA: 10 mg/m³ 10 hours.</p>
<p>ID 2 di[(²H₃)Methyl] sulphoxide</p>	<p>AIHA WEEL (United States, 10/2011). TWA: 250 ppm 8 hours.</p>

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, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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.

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

Section 8. Exposure controls/personal 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.
- 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.
- 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.

Section 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: 4Hz 1% H2O/D2O	Liquid.
	Autotest, no salt	Liquid.
	1H S/N	Liquid.
	19F S/N	Liquid.
	1H Lineshape	Liquid.
	13C S/N ASTM doped	Liquid.
	ID 1	Liquid.
	ID 2	Liquid. [Clear.]
Color	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Colorless.
Odor	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Ripe olive.
Odor threshold	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Not available.

Section 9. Physical and chemical properties

pH	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Not available.
Melting point	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	3.81°C (38.9°F)
	1H S/N	-64°C (-83.2°F)
	19F S/N	5°C (41°F)
	1H Lineshape	-95°C (-139°F)
	13C S/N ASTM doped	Not available.
	ID 1	-64°C (-83.2°F)
	ID 2	18 to 18.54°C (64.4 to 65.4°F)
Boiling point	: 4Hz 1% H2O/D2O	101.4°C (214.5°F)
	Autotest, no salt	101.1°C (214°F)
	1H S/N	60.9°C (141.6°F)
	19F S/N	80°C (176°F)
	1H Lineshape	55.5°C (131.9°F)
	13C S/N ASTM doped	90°C (194°F)
	ID 1	60.9°C (141.6°F)
	ID 2	189°C (372.2°F)
Flash point	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Closed cup: -11.11°C (12°F)
	1H Lineshape	Closed cup: -17°C (1.4°F)
	13C S/N ASTM doped	Closed cup: 21.1°C (70°F)
	ID 1	Not available.
	ID 2	Closed cup: 88°C (190.4°F)
Evaporation rate	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Not available.
Flammability (solid, gas)	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Not available.
Lower and upper explosive (flammable) limits	: 4Hz 1% H2O/D2O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Lower: 3%

Section 9. Physical and chemical properties

Vapor pressure	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	Not available. Not available. Not available. Not available. Not available. Not available. Not available. 0.061 kPa (0.46 mm Hg) [room temperature]
Vapor density	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	Not available. Not available. Not available. Not available. Not available. Not available. Not available. 1.04 [Air = 1]
Relative density	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	1.107 1.1 [(D2O)] 1.5 Not available. 0.872 0.98 1500 1.18
Solubility	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	Easily soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water. Very slightly soluble in the following materials: cold water and hot water. Insoluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water, hot water and acetone. Easily soluble in the following materials: cold water and hot water. Very slightly soluble in the following materials: cold water and hot water. Soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.	
Partition coefficient: n-octanol/water	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	Not available. Not available. Not available. Not available. Not available. Not available. Not available. Not available.
Auto-ignition temperature	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	Not available. Not available. Not available. Not available. Not available. Not available. Not available. 215°C (419°F)

Section 9. Physical and chemical properties

Decomposition temperature	: 4Hz 1% H2O/D2O	Not available.	
	Autotest, no salt	Not available.	
	1H S/N	Not available.	
	19F S/N	Not available.	
	1H Lineshape	Not available.	
	13C S/N ASTM doped	Not available.	
	ID 1	Not available.	
	ID 2	Not available.	
	Viscosity	: 4Hz 1% H2O/D2O	Not available.
		Autotest, no salt	Not available.
1H S/N		Not available.	
19F S/N		Not available.	
1H Lineshape		Not available.	
13C S/N ASTM doped		Not available.	
ID 1		Not available.	
ID 2		Not available.	

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.
	Autotest, no salt	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.
	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.
	ID 1	No specific test data related to reactivity available for this product or its ingredients.
	ID 2	No specific test data related to reactivity available for this product or its ingredients.
10.2 Chemical stability	: 4Hz 1% H2O/D2O	The product is stable.
	Autotest, no salt	The product is stable.
	1H S/N	The product is stable.
	19F S/N	The product is stable.
	1H Lineshape	The product is stable.
	13C S/N ASTM doped	The product is stable.
	ID 1	The product is stable.
	ID 2	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.
	Autotest, no salt	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.
	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.
ID 1	Under normal conditions of storage and use,	

Section 10. Stability and reactivity

	ID 2	hazardous reactions will not occur. Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N	No specific data. No specific data. No specific data. Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
	1H Lineshape	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
	13C S/N ASTM doped	Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
	ID 1 ID 2	No specific data. Avoid all possible sources of ignition (spark or flame). Do not pressurize, 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 Autotest, no salt 1H S/N 19F S/N	No specific data. No specific data. No specific data. Reactive or incompatible with the following materials: oxidizing materials
	1H Lineshape	Reactive or incompatible with the following materials: oxidizing materials
	13C S/N ASTM doped	Reactive or incompatible with the following materials: oxidizing materials
	ID 1 ID 2	No specific data. Reactive or incompatible with the following materials: oxidizing materials
10.6 Hazardous decomposition products	: 4Hz 1% H2O/D2O	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Autotest, no salt	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	1H S/N	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	19F S/N	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	1H Lineshape	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

13C S/N ASTM doped

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

ID 1

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

ID 2

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
Autotest, no salt Methanol (¹³ C)	LC50 Inhalation Gas.	Rat	145000 ppm	1 hours
	LC50 Inhalation Gas.	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
1H S/N (² H)Chloroform	LC50 Inhalation Vapor	Rat	47702 mg/m ³	4 hours
	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
Ethylbenzene	LC50 Inhalation Gas.	Rat	4000 ppm	4 hours
	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	3500 mg/kg	-
19F S/N (² H ₆)Benzene	LD50 Oral	Rat	930 mg/kg	-
1H Lineshape (² H ₆)Acetone Trichloromethane	LD50 Oral	Rat	5800 mg/kg	-
	LC50 Inhalation Vapor	Rat	47702 mg/m ³	4 hours
	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
13C S/N ASTM doped (² H ₆)Benzene 1,4-Dioxane	LD50 Oral	Rat	930 mg/kg	-
	LD50 Oral	Rat	4200 mg/kg	-
ID 1 (² H)Chloroform	LC50 Inhalation Vapor	Rat	47702 mg/m ³	4 hours
	LD50 Dermal	Rabbit	>20 g/kg	-
	LD50 Oral	Rat	300 mg/kg	-
Iodomethane (¹³ C)	LC50 Inhalation Vapor	Rat	1300 mg/m ³	4 hours
	LD50 Oral	Rat	76 mg/kg	-
Trimethyl phosphite	LC50 Inhalation Vapor	Rat	182000 mg/m ³	1 hours
	LD50 Dermal	Rabbit	933.8 mg/kg	-
	LD50 Oral	Rat	1350 mg/kg	-
ID 2 di[(³ H)Methyl] sulphoxide	LD50 Dermal	Rat	40000 mg/kg	-
	LD50 Oral	Rat	14500 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Autotest, no salt Methanol (¹³ C)	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	40 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
1H S/N (² H)Chloroform	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Ethylbenzene	Skin - Mild irritant	Rabbit	-	24 hours 15 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	-
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	-
Trichloromethane	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	395 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 20 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	-

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ID 1 (² H)Chloroform	Eyes - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-	
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-	
	Iodomethane (¹³ C)	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
		Skin - Mild irritant	Rat	-	30 minutes 1 Grams	-
		Skin - Severe irritant	Rabbit	-	500 milligrams	-
	Trimethyl phosphite	Skin - Mild irritant	Human	-	10 minutes 1 Grams	-
Eyes - Mild irritant Skin - Severe irritant		Rabbit Rabbit	- -	0.1 Milliliters 500 milligrams	- -	
ID 2 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 milligrams	-	

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
1H S/N (² H)Chloroform	-	2B	Reasonably anticipated to be a human carcinogen.
Ethylbenzene	-	2B	-
19F S/N (² H ₆)Benzene	+	1	Known to be a human carcinogen.
1H Lineshape Trichloromethane	-	2B	Reasonably anticipated to be a human carcinogen.
13C S/N ASTM doped (² H ₆)Benzene	+	1	Known to be a human carcinogen.
1,4-Dioxane	-	2B	Reasonably anticipated to be a human carcinogen.
ID 1 (² H)Chloroform	-	2B	Reasonably anticipated to be a human carcinogen.
Iodomethane (¹³ C)	-	3	-

Reproductive toxicity

Not available.

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Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Autotest, no salt Methanol (¹³ C)	Category 1 Category 3	Not determined Not applicable.	central nervous system (CNS) Respiratory tract irritation
1H S/N (² H)Chloroform	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
Ethylbenzene	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
19F S/N (² H ₆)Benzene	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
1H Lineshape (² H ₆)Acetone Trichloromethane	Category 3 Category 3	Not applicable. Not applicable.	Narcotic effects Respiratory tract irritation and Narcotic effects
13C S/N ASTM doped (² H ₆)Benzene	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
1,4-Dioxane	Category 3	Not applicable.	Respiratory tract irritation
ID 1 (² H)Chloroform	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects
Iodomethane (¹³ C)	Category 3	Not applicable.	Respiratory tract irritation
Trimethyl phosphite	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
1H S/N (² H)Chloroform	Category 2	Not determined	kidneys and liver
19F S/N (² H ₆)Benzene	Category 1	Oral Inhalation	blood system blood system

Section 11. Toxicological information

1H Lineshape Trichloromethane	Category 2	Not determined	heart, kidneys and liver
13C S/N ASTM doped (² H ₆)Benzene	Category 1	Oral	blood system
1,4-Dioxane	Category 1	Inhalation Oral	blood system kidneys and liver
ID 1 (² H)Chloroform	Category 2	Not determined	kidneys and liver
ID 2 di[(² H ₃)Methyl] sulphoxide	Category 2	Oral	kidneys and liver

Aspiration hazard

Name	Result
1H S/N (² H)Chloroform Ethylbenzene	ASPIRATION HAZARD - Category 1 ASPIRATION HAZARD - Category 1
19F S/N (² H ₆)Benzene	ASPIRATION HAZARD - Category 1
13C S/N ASTM doped (² H ₆)Benzene	ASPIRATION HAZARD - Category 1
ID 1 (² H)Chloroform	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact	: 4Hz 1% H ₂ O/D ₂ O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped ID 1 ID 2	No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. Causes eye irritation.
Inhalation	: 4Hz 1% H ₂ O/D ₂ O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. No known significant effects or critical hazards. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation. 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 and dizziness. May cause respiratory irritation. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. Can cause central nervous system (CNS)

Section 11. Toxicological information

	ID 1	depression. May cause drowsiness and dizziness. May cause respiratory irritation. Can cause central nervous system (CNS) depression. May cause drowsiness and dizziness. May cause respiratory irritation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure. No known significant effects or critical hazards.
	ID 2	No known significant effects or critical hazards.
Skin contact	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape	No known significant effects or critical hazards. No known significant effects or critical hazards. Causes skin irritation. Causes skin irritation. Defatting to the skin. Defatting to the skin. May cause skin dryness and irritation.
	13C S/N ASTM doped ID 1 ID 2	Causes skin irritation. Defatting to the skin. Causes skin irritation. No known significant effects or critical hazards.
Ingestion	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. Harmful if swallowed. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	19F S/N	Harmful if swallowed. Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.
	1H Lineshape	Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	13C S/N ASTM doped	Harmful if swallowed. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	ID 1	Harmful if swallowed. Can cause central nervous system (CNS) depression. Irritating to mouth, throat and stomach.
	ID 2	May be irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N	No specific data. No specific data. 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
	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
	ID 1	Adverse symptoms may include the following: pain or irritation watering

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	ID 2	redness Adverse symptoms may include the following: irritation watering redness
Inhalation	: 4Hz 1% H2O/D2O Autotest, no salt	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
	1H S/N	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo
	19F S/N	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	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 nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	ID 1	Adverse symptoms may include the following: respiratory tract irritation coughing nausea or vomiting headache drowsiness/fatigue dizziness/vertigo unconsciousness
	ID 2	No specific data.
Skin contact	: 4Hz 1% H2O/D2O Autotest, no salt	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
	1H S/N	Adverse symptoms may include the following: irritation redness
	19F S/N	Adverse symptoms may include the following: irritation

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		redness dryness cracking
	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
	ID 1	Adverse symptoms may include the following: irritation redness
	ID 2	No specific data.
Ingestion	: 4Hz 1% H2O/D2O Autotest, no salt	No specific data. Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
	1H S/N 19F S/N	No specific data. Adverse symptoms may include the following: nausea or vomiting
	1H Lineshape 13C S/N ASTM doped ID 1 ID 2	No specific data. No specific data. No specific data. No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short 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

Not available.

General	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. No known significant effects or critical hazards. May cause damage to organs through prolonged or repeated exposure. 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. May cause damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis. Causes damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking
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	ID 1	and/or dermatitis. May cause damage to organs through prolonged or repeated exposure.
	ID 2	May cause damage to organs through prolonged or repeated exposure.
Carcinogenicity	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. No known significant effects or critical hazards. Suspected of causing cancer. Risk of cancer depends on duration and level of exposure. May cause cancer. Risk of cancer depends on duration and level of exposure. Suspected of causing cancer. Risk of cancer depends on duration and level of exposure. May cause cancer. Risk of cancer depends on duration and level of exposure.
	ID 1	Suspected of causing cancer. Risk of cancer depends on duration and level of exposure.
	ID 2	No known significant effects or critical hazards.
Mutagenicity	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. May cause genetic defects. No known significant effects or critical hazards. May cause genetic defects.
	ID 1	No known significant effects or critical hazards.
	ID 2	No known significant effects or critical hazards.
Teratogenicity	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. May damage the unborn child. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
	ID 1	No known significant effects or critical hazards.
	ID 2	No known significant effects or critical hazards.
Developmental effects	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. No known significant effects or critical hazards.
	ID 1	No known significant effects or critical hazards.
	ID 2	No known significant effects or critical hazards.
Fertility effects	: 4Hz 1% H2O/D2O Autotest, no salt 1H S/N 19F S/N 1H Lineshape 13C S/N ASTM doped	No known significant effects or critical hazards. May damage fertility. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
	ID 1	No known significant effects or critical hazards.
	ID 2	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

Route	ATE value
1H S/N Oral	500.5 mg/kg
19F S/N Oral	930.5 mg/kg
1H Lineshape Oral	30000 mg/kg
13C S/N ASTM doped Oral	1360.7 mg/kg
ID 1 Oral Dermal Inhalation (vapors)	477.3 mg/kg 50505.5 mg/kg 300 mg/l
ID 2 Oral	25000 mg/kg

Other information	: 4Hz 1% H ₂ O/D ₂ O	Not available.
	Autotest, no salt	Not available.
	1H S/N	Not available.
	19F S/N	Not available.
	1H Lineshape	Not available.
	13C S/N ASTM doped	Not available.
	ID 1	Not available.
	ID 2	Not available.

Section 12. Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Autotest, no salt Methanol (¹³ C)	Acute EC50 16.912 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 3289 mg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 100000 µg/l Fresh water	Fish - Pimephales promelas - Juvenile (Fledgling, Hatchling, Weanling)	96 hours
	Chronic NOEC 9.96 mg/l Marine water	Algae - Ulva pertusa	96 hours
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

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Ethylbenzene	Chronic NOEC 6300 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Acute EC50 4600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 3600 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 2970 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 5200 µg/l Marine water	Crustaceans - Americamysis bahia	48 hours
19F S/N (² H ₆)Benzene	Acute LC50 4200 µg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 1000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	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
1H Lineshape (² H ₆)Acetone	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 EC50 20.565 mg/l Marine water	Algae - Ulva pertusa	96 hours
	Acute LC50 6000000 µg/l Fresh water	Crustaceans - Gammarus pulex	48 hours
Trichloromethane	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
	Acute EC50 13.3 mg/l Fresh water	Algae - Chlamydomonas reinhardtii - Exponential growth phase	72 hours
13C S/N ASTM doped (² H ₆)Benzene	Acute EC50 2.803 mg/l Fresh water	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
13C S/N ASTM doped (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 ul/L Fresh water	Fish - Oncorhynchus gorbuscha - Fry	96 hours
Chronic NOEC 1.5 to 5.4 ul/L Marine	Fish - Morone saxatilis - Juvenile	4 weeks	

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1,4-Dioxane	water Acute LC50 6700000 µg/l Marine water	(Fledgling, Hatchling, Weanling) Fish - Menidia beryllina	96 hours
ID 1 (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
ID 2 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
Benzamide (¹⁵ N)	Acute LC50 661000 µg/l Fresh water	Fish - Pimephales promelas	96 hours

12.2 Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
1H S/N Ethylbenzene	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Autotest, no salt Methanol (¹³ C)	-0.77	<10	low
1H S/N (² H)Chloroform	1.97	690	high
Ethylbenzene	3.6	-	low
19F S/N (² H ₆)Benzene	2.13	11	low
1H Lineshape (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
ID 1 (² H)Chloroform	1.97	690	high
Iodomethane (¹³ C)	1.57	-	low
Trimethyl phosphite	-0.73	-	low
ID 2 di[(² H ₃)Methyl] sulphoxide	-1.35	3.16	low

Section 12. Ecological information

12.4 Mobility in soil

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

12.5 Other adverse effects :

4Hz 1% H2O/D2O	No known significant effects or critical hazards.
Autotest, no salt	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.
1H Lineshape	No known significant effects or critical hazards.
13C S/N ASTM doped	No known significant effects or critical hazards.
ID 1	No known significant effects or critical hazards.
ID 2	No known significant effects or critical hazards.

Section 13. Disposal considerations

13.1 Waste treatment methods

Disposal methods : The generation of waste should be avoided or minimized 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. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. 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 spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

This Material Safety Data Sheet 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

Additional information : **Remarks**
De minimis quantities

DOT / IMDG / IATA : Not regulated.

Section 15. Regulatory information

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

U.S. Federal regulations : TSCA 8(a) PAIR: Acetonitrile (¹⁵N)
Commerce control list precursor: Trimethyl phosphite
United States inventory (TSCA 8b): Not determined.
Clean Water Act (CWA) 307: Chromium(III) 4-oxopent-2-ene-2-olate; (²H)Chloroform; Trichloromethane; Ethylbenzene; Acetonitrile (¹⁵N)
Clean Water Act (CWA) 311: (²H)Chloroform; Trichloromethane; Ethylbenzene
Clean Air Act (CAA) 112 regulated toxic substances: (²H)Chloroform

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
1H S/N (² H)Chloroform	60 - 100	Yes.	-	-	-	-
1H Lineshape Trichloromethane	0.1 - 1	Yes.	-	-	-	-
ID 1 (² H)Chloroform	60 - 100	Yes.	-	-	-	-

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
 Immediate (acute) health hazard
 Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard

Section 15. Regulatory information

Autotest, no salt Methanol (¹³ C)	< 0.1	Yes.	No.	No.	Yes.	Yes.
1H S/N (² H)Chloroform	60 - 100	No.	No.	No.	Yes.	Yes.
Ethylbenzene	< 0.1	Yes.	No.	No.	Yes.	Yes.
19F S/N (² H ₆)Benzene	60 - 100	Yes.	No.	No.	Yes.	Yes.
1H Lineshape (² H ₆)Acetone	60 - 100	Yes.	No.	No.	Yes.	No.
Trichloromethane	0.1 - 1	No.	No.	No.	Yes.	Yes.
13C S/N ASTM doped (² H ₆)Benzene	30 - 60	Yes.	No.	No.	Yes.	Yes.
1,4-Dioxane	30 - 60	Yes.	No.	No.	Yes.	Yes.
ID 1 (² H)Chloroform	60 - 100	No.	No.	No.	Yes.	Yes.
Iodomethane (¹³ C)	0.1 - 1	No.	No.	No.	Yes.	Yes.
Trimethyl phosphite	0.1 - 1	Yes.	No.	No.	Yes.	No.
ID 2 di[(² H ₃)Methyl] sulphoxide	60 - 100	Yes.	No.	No.	Yes.	Yes.
Benzamide (¹⁵ N)	1 - 5	No.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	1H S/N (² H)Chloroform	865-49-6	60 - 100
	Ethylbenzene	100-41-4	0.1 - 1
	19F S/N (² H ₆)Benzene	1076-43-3	60 - 100
	1H Lineshape Trichloromethane	67-66-3	0.1 - 1
	13C S/N ASTM doped (² H ₆)Benzene	1076-43-3	30 - 60
	1,4-Dioxane	123-91-1	15 - 40
	ID 1 (² H)Chloroform	865-49-6	60 - 100
	Iodomethane (¹³ C)	4227-95-6	0.1 - 1
	ID 2 Benzamide (¹⁵ N)	31656-62-9	1 - 5
	Supplier notification	1H S/N (² H)Chloroform	865-49-6
Ethylbenzene		100-41-4	<0.1
19F S/N (² H ₆)Benzene		1076-43-3	60 - 100
1H Lineshape			

Section 15. Regulatory information

	Trichloromethane	67-66-3	0.1 - 1
	13C S/N ASTM doped (² H ₆)Benzene	1076-43-3	30 - 60
	1,4-Dioxane	123-91-1	15 - 40
	ID 1 (² H)Chloroform	865-49-6	60 - 100
	Iodomethane (¹³ C)	4227-95-6	0.1 - 1
	ID 2 Benzamide (¹⁵ N)	31656-62-9	1 - 5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts

: The following components are listed: CHLOROFORM; 1,4-DIOXANE; BENZENE; ACETONE

New York

: The following components are listed: Chloroform; Methane, trichloro-; 1,4-Dioxane; Benzene; Acetone; 2-Propanone; Chloroform; Methane, trichloro-

New Jersey

: The following components are listed: DIMETHYL SULFOXIDE; METHANE, SULFINYLBI-; CHLOROFORM; METHANE, TRICHLORO-; 1,4-DIOXANE; 1, 4-DIETHYLENE DIOXIDE; BENZENE; ACETONE; 2-PROPANONE; CHLOROFORM; METHANE, TRICHLORO-

Pennsylvania

: The following components are listed: di[(²H₃)Methyl] sulphoxide; METHANE, TRICHLORO-; 1,4-DIOXANE; BENZENE; 2-PROPANONE; METHANE, TRICHLORO-

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Autotest, no salt Methanol (¹³ C)	No.	Yes.	No.	No.
1H S/N (² H)Chloroform	Yes.	Yes.	20 µg/day (ingestion) 40 µg/day (inhalation)	No.
Ethylbenzene	Yes.	No.	41 µg/day (ingestion) 54 µg/day (inhalation)	No.
19F S/N (² H ₆)Benzene	Yes.	Yes.	6.4 µg/day (ingestion) 13 µg/day (inhalation)	24 µg/day (ingestion) 49 µg/day (inhalation)
1H Lineshape Trichloromethane	Yes.	Yes.	20 µg/day (ingestion) 40 µg/day (inhalation)	No.
13C S/N ASTM doped (² H ₆)Benzene	Yes.	Yes.	6.4 µg/day	24 µg/day (ingestion)

Section 15. Regulatory information

1,4-Dioxane	Yes.	No.	(ingestion) 13 µg/day (inhalation) Yes.	49 µg/day (inhalation) No.
ID 1 (² H)Chloroform	Yes.	Yes.	20 µg/day (ingestion) 40 µg/day (inhalation)	No.
Iodomethane (¹³ C)	Yes.	No.	No.	No.

Canada inventory : Not determined.

International regulations

International lists

: **Australia inventory (AICS)**: Not determined.
China inventory (IECSC): Not determined.
Japan inventory: Not determined.
Korea inventory: Not determined.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

**Chemical Weapons
Convention List Schedule
I Chemicals** : Not listed

**Chemical Weapons
Convention List Schedule
II Chemicals** : Not listed

**Chemical Weapons
Convention List Schedule
III Chemicals** : Not listed

Section 16. Other information

History

Date of issue : 08/21/2014.

Date of previous issue : 12/30/2013.

Version : 2

✔ Indicates information that has changed from previously issued version.

Notice to reader

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