

# SAFETY DATA SHEET



ATS Sample Kit for X[H] Nano Probe, Part Number 190886901

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

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

### 1.1 Product identifier

<b>Product name</b>	: ATS Sample Kit for X[H] Nano Probe, Part Number 190886901		
<b>Part No. (Kit)</b>	: 190886901		
<b>Part No.</b>	: 13C S/N ASTM	190887069	
	: 13C S/N ASTM doped	190887091	

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

Identified uses		
Analytical chemistry.		
13C S/N ASTM	42 µl	
13C S/N ASTM doped	42 µl	

### 1.3 Details of the supplier of the safety data sheet

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

**e-mail address of person responsible for this SDS** : pdl-msds\_author@agilent.com

### 1.4 Emergency telephone number

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

## SECTION 2: Hazards identification

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

### 2.1 Classification of the substance or mixture

<b>Product definition</b>	: 13C S/N ASTM	Mixture (encapsulated in article)
	: 13C S/N ASTM doped	Mixture (encapsulated in article)

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

##### 13C S/N ASTM

H225	FLAMMABLE LIQUIDS - Category 2
H315	SKIN CORROSION/IRRITATION - Category 2
H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H340	GERM CELL MUTAGENICITY - Category 1B
H350	CARCINOGENICITY - Category 1A
H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H304	ASPIRATION HAZARD - Category 1
H412	LONG-TERM AQUATIC HAZARD - Category 3

##### 13C S/N ASTM doped

H225	FLAMMABLE LIQUIDS - Category 2
H315	SKIN CORROSION/IRRITATION - Category 2

**Date of issue/Date of revision** : 19/12/2013

## SECTION 2: Hazards identification

H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
H340	GERM CELL MUTAGENICITY - Category 1B
H350	CARCINOGENICITY - Category 1A
H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
H304	ASPIRATION HAZARD - Category 1
H412	LONG-TERM AQUATIC HAZARD - Category 3

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

13C S/N ASTM	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.
13C S/N ASTM doped	The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

<b>Classification</b>	: 13C S/N ASTM	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/37/38
	13C S/N ASTM doped	R10 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/37/38
<b>Physical/chemical hazards</b>	: 13C S/N ASTM	Highly flammable.
	13C S/N ASTM doped	Flammable.
<b>Human health hazards</b>	: 13C S/N ASTM	May cause cancer. May cause heritable genetic damage. Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Also harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin.
	13C S/N ASTM doped	May cause cancer. May cause heritable genetic damage. Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed. Also harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin.

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

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

### 2.2 Label elements

#### Hazard pictograms



#### Signal word

: 13C S/N ASTM Danger  
13C S/N ASTM doped Danger

#### Hazard statements

: 13C S/N ASTM **GHS02** - Highly flammable liquid and vapour.  
**GHS07** - Causes skin irritation.  
May cause respiratory irritation.  
Causes serious eye irritation.  
**GHS08** - May be fatal if swallowed and enters airways.  
May cause genetic defects.  
May cause cancer.  
Causes damage to organs through prolonged or repeated exposure.  
Harmful to aquatic life with long lasting effects.

**SECTION 2: Hazards identification**

13C S/N ASTM doped

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Highly flammable liquid and vapour.  
**GHS07** -  
Causes skin irritation.  
May cause respiratory irritation.  
Causes serious eye irritation.  
**GHS08** -  
May be fatal if swallowed and enters airways.  
May cause genetic defects.  
May cause cancer.  
Causes damage to organs through prolonged or repeated exposure.  
Harmful to aquatic life with long lasting effects.

**Precautionary statements**

**Prevention**

: 13C S/N ASTM

P201 - Obtain special instructions before use.  
P280 - Wear protective gloves. Wear eye or face protection.  
P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.  
P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.  
P273 - Avoid release to the environment.  
P260 - Do not breathe vapour.

13C S/N ASTM doped

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P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.  
P273 - Avoid release to the environment.  
P260 - Do not breathe vapour.

**Response**

: 13C S/N ASTM

P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.  
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.

13C S/N ASTM doped

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

**Storage**

: 13C S/N ASTM  
13C S/N ASTM doped

P235 - Keep cool.  
P235 - Keep cool.

**Disposal**

: 13C S/N ASTM  
13C S/N ASTM doped

P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.  
P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Hazardous ingredients**

: **13C S/N ASTM**  
(<sup>2</sup>H<sub>6</sub>)Benzene  
1,4-Dioxane

**13C S/N ASTM doped**  
(<sup>2</sup>H<sub>6</sub>)Benzene  
1,4-Dioxane

**Supplemental label elements**

: 13C S/N ASTM  
13C S/N ASTM doped

Not applicable.  
Not applicable.

**Special packaging requirements**

**Tactile warning of danger**

: 13C S/N ASTM  
13C S/N ASTM doped

Not applicable.  
Not applicable.

## SECTION 2: Hazards identification

### 2.3 Other hazards

**Other hazards which do not result in classification** : 13C S/N ASTM Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation.  
 13C S/N ASTM doped Defatting to the skin. Prolonged or repeated contact may dry skin and cause irritation.

## 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** : 13C S/N ASTM Mixture (encapsulated in article)  
 13C S/N ASTM doped Mixture (encapsulated in article)

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
13C S/N ASTM ( <sup>2</sup> H <sub>6</sub> )Benzene	EC: 214-061-8 CAS: 1076-43-3 Index: 601-020-00-8	>=50 - <75	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304	[1] [2]
1,4-Dioxane	EC: 204-661-8 CAS: 123-91-1 Index: 603-024-00-5	>=35 - <50	F; R11 R19 Carc. Cat. 3; R40 Xi; R36/37 R66	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 (Respiratory tract irritation)	[1] [2]
13C S/N ASTM doped ( <sup>2</sup> H <sub>6</sub> )Benzene	EC: 214-061-8 CAS: 1076-43-3 Index: 601-020-00-8	>=50 - <75	F; R11 Carc. Cat. 1; R45 Muta. Cat. 2; R46 T; R48/23/24/25 Xn; R65 Xi; R36/38	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304	[1] [2]
1,4-Dioxane	EC: 204-661-8 CAS: 123-91-1 Index: 603-024-00-5	>=35 - <50	F; R11 R19 Carc. Cat. 3; R40 Xi; R36/37 R66  <b>See Section 16 for the full text of the R-phrases declared above.</b>	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 (Respiratory tract irritation)  <b>See Section 16 for the full text of the H statements declared above.</b>	[1] [2]

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

#### Type

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

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

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

<b>Eye contact</b>	: 13C S/N ASTM	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	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.
<b>Inhalation</b>	: 13C S/N ASTM	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
	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.
<b>Skin contact</b>	: 13C S/N ASTM	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	13C S/N ASTM doped	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
<b>Ingestion</b>	: 13C S/N ASTM	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.
	13C S/N ASTM doped	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small

**SECTION 4: First aid measures**

<p><b>Protection of first-aiders</b> : 13C S/N ASTM</p>	<p>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.</p> <p>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.</p>
<p>13C S/N ASTM doped</p>	<p>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.</p>

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

Potential acute health effects

<p><b>Eye contact</b> : 13C S/N ASTM</p>	<p>Causes serious eye irritation.</p>
<p>13C S/N ASTM doped</p>	<p>Causes serious eye irritation.</p>
<p><b>Inhalation</b> : 13C S/N ASTM</p>	<p>May cause respiratory irritation.</p>
<p>13C S/N ASTM doped</p>	<p>May cause respiratory irritation.</p>
<p><b>Skin contact</b> : 13C S/N ASTM</p>	<p>Causes skin irritation. Defatting to the skin.</p>
<p>13C S/N ASTM doped</p>	<p>Causes skin irritation. Defatting to the skin.</p>
<p><b>Ingestion</b> : 13C S/N ASTM</p>	<p>May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.</p>
<p>13C S/N ASTM doped</p>	<p>May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.</p>

Over-exposure signs/symptoms

<p><b>Eye contact</b> : 13C S/N ASTM</p>	<p>Adverse symptoms may include the following: pain or irritation watering redness</p>
<p>13C S/N ASTM doped</p>	<p>Adverse symptoms may include the following: pain or irritation watering redness</p>
<p><b>Inhalation</b> : 13C S/N ASTM</p>	<p>Adverse symptoms may include the following: respiratory tract irritation coughing</p>
<p>13C S/N ASTM doped</p>	<p>Adverse symptoms may include the following: respiratory tract irritation coughing</p>
<p><b>Skin contact</b> : 13C S/N ASTM</p>	<p>Adverse symptoms may include the following: irritation redness dryness cracking</p>
<p>13C S/N ASTM doped</p>	<p>Adverse symptoms may include the following: irritation redness dryness cracking</p>

**SECTION 4: First aid measures**

<b>Ingestion</b>	: 13C S/N ASTM	Adverse symptoms may include the following: nausea or vomiting
	13C S/N ASTM doped	Adverse symptoms may include the following: nausea or vomiting

**4.3 Indication of any immediate medical attention and special treatment needed**

<b>Notes to physician</b>	: 13C S/N ASTM	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	13C S/N ASTM doped	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	: 13C S/N ASTM	No specific treatment.
	13C S/N ASTM doped	No specific treatment.

**SECTION 5: Firefighting measures****5.1 Extinguishing media**

<b>Suitable extinguishing media</b>	: 13C S/N ASTM	Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
	13C S/N ASTM doped	Use dry chemical, CO <sub>2</sub> , water spray (fog) or foam.
<b>Unsuitable extinguishing media</b>	: 13C S/N ASTM	Do not use water jet.
	13C S/N ASTM doped	Do not use water jet.

**5.2 Special hazards arising from the substance or mixture**

<b>Hazards from the substance or mixture</b>	: 13C S/N ASTM	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapour/gas is heavier than air and will spread along the ground. Vapours may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
	13C S/N ASTM doped	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
<b>Hazardous combustion products</b>	: 13C S/N ASTM	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	13C S/N ASTM doped	Decomposition products may include the following materials: carbon dioxide carbon monoxide

**5.3 Advice for firefighters**

<b>Special precautions for fire-fighters</b>	: 13C S/N ASTM	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
	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.

## SECTION 5: Firefighting measures

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

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

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

### 6.2 Environmental precautions

: 13C S/N ASTM	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.
13C S/N ASTM doped	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

### 6.3 Methods and materials for containment and cleaning up



## SECTION 6: Accidental release measures

**Methods for cleaning up** : 13C S/N ASTM

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

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.

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

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

**Protective measures** : 13C S/N ASTM

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

13C S/N ASTM doped

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

**Advice on general occupational hygiene** : 13C S/N ASTM

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

13C S/N ASTM doped

## SECTION 7: Handling and storage

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** : 13C S/N ASTM

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

13C S/N ASTM doped

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

### 7.3 Specific end use(s)

**Recommendations** : 13C S/N ASTM Industrial applications, Professional applications.  
13C S/N ASTM doped 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

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

**SECTION 8: Exposure controls/personal protection**

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

**Derived effect levels**

No DNELs available.

**Predicted effect concentrations**

No PNECs available.

**8.2 Exposure controls**

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

**Individual protection measures**

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

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

**Skin protection**

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

**Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Refer to European Standard EN 1149 for further information on material and design requirements and test methods.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

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

<b>Physical state</b>	: 13C S/N ASTM	Liquid.
	13C S/N ASTM doped	Liquid.
<b>Colour</b>	: 13C S/N ASTM	Colourless.
	13C S/N ASTM doped	Not available.
<b>Odour</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Odour threshold</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>pH</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Melting point/freezing point</b>	: 13C S/N ASTM	6.8°C
	13C S/N ASTM doped	Not available.
<b>Initial boiling point and boiling range</b>	: 13C S/N ASTM	79.1°C
	13C S/N ASTM doped	90°C
<b>Flash point</b>	: 13C S/N ASTM	Closed cup: -18 to 23°C
	13C S/N ASTM doped	Closed cup: 21.1°C
<b>Evaporation rate</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Flammability (solid, gas)</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Upper/lower flammability or explosive limits</b>	: 13C S/N ASTM	Lower: 1.3%
		Upper: 8%
	13C S/N ASTM doped	Not available.
<b>Vapour pressure</b>	: 13C S/N ASTM	22.1 kPa [room temperature]
	13C S/N ASTM doped	Not available.
<b>Vapour density</b>	: 13C S/N ASTM	>1 [Air = 1]
	13C S/N ASTM doped	Not available.
<b>Relative density</b>	: 13C S/N ASTM	0.95
	13C S/N ASTM doped	0.98
<b>Solubility(ies)</b>	: 13C S/N ASTM	Easily soluble in the following materials: cold water and hot water.
	13C S/N ASTM doped	Easily soluble in the following materials: cold water and hot water.
<b>Partition coefficient: n-octanol/water</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Auto-ignition temperature</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Decomposition temperature</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Viscosity</b>	: 13C S/N ASTM	Not available.
	13C S/N ASTM doped	Not available.
<b>Explosive properties</b>	: 13C S/N ASTM	Slightly explosive in the presence of the following materials or conditions: acids.
	13C S/N ASTM doped	Slightly explosive in the presence of the following materials or conditions: acids. Forms explosive peroxides on prolonged storage.

**9.2 Other information**

No additional information.

## SECTION 10: Stability and reactivity

<b>10.1 Reactivity</b>	: 13C S/N ASTM	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.
<b>10.2 Chemical stability</b>	: 13C S/N ASTM	The product is stable.
	13C S/N ASTM doped	The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: 13C S/N ASTM	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.
<b>10.4 Conditions to avoid</b>	: 13C S/N ASTM	Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
	13C S/N ASTM doped	Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
<b>10.5 Incompatible materials</b>	: 13C S/N ASTM	Reactive or incompatible with the following materials: oxidizing materials
	13C S/N ASTM doped	Reactive or incompatible with the following materials: oxidizing materials
<b>10.6 Hazardous decomposition products</b>	: 13C S/N ASTM	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	13C S/N ASTM doped	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
<b>13C S/N ASTM</b> ( <sup>2</sup> H <sub>6</sub> )Benzene 1,4-Dioxane	LD50 Oral	Rat	930 mg/kg	-
	LD50 Oral	Rat	4200 mg/kg	-
<b>13C S/N ASTM doped</b> ( <sup>2</sup> H <sub>6</sub> )Benzene 1,4-Dioxane	LD50 Oral	Rat	930 mg/kg	-
	LD50 Oral	Rat	4200 mg/kg	-

#### Acute toxicity estimates

Not available.

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>13C S/N ASTM</b> ( <sup>2</sup> H <sub>6</sub> )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	-

## SECTION 11: Toxicological information

13C S/N ASTM doped ( <sup>2</sup> H <sub>6</sub> )Benzene	Skin - Mild irritant	Rabbit	-	515 milligrams	-
	Eyes - Moderate irritant Eyes - Severe irritant	Rabbit Rabbit	- -	88 milligrams 24 hours 2 milligrams	- -
1,4-Dioxane	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Skin - Mild irritant	Rabbit	-	515 milligrams	-

### Sensitiser

**Conclusion/Summary** : Not available.

### Chronic toxicity / Carcinogenicity / Mutagenicity / Teratogenicity / Reproductive toxicity

Not available.

### Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
13C S/N ASTM 1,4-Dioxane	Category 3	Not applicable.	Respiratory tract irritation
13C S/N ASTM doped 1,4-Dioxane	Category 3	Not applicable.	Respiratory tract irritation

### Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
13C S/N ASTM ( <sup>2</sup> H <sub>6</sub> )Benzene	Category 1	Not determined	Not determined
13C S/N ASTM doped ( <sup>2</sup> H <sub>6</sub> )Benzene	Category 1	Not determined	Not determined

### Aspiration hazard

Product/ingredient name	Result
13C S/N ASTM ( <sup>2</sup> H <sub>6</sub> )Benzene	ASPIRATION HAZARD - Category 1
13C S/N ASTM doped ( <sup>2</sup> H <sub>6</sub> )Benzene	ASPIRATION HAZARD - Category 1

**Information on the likely routes of exposure** : Not available.

### Potential acute health effects

<b>Inhalation</b>	: 13C S/N ASTM 13C S/N ASTM doped	May cause respiratory irritation. May cause respiratory irritation.
<b>Ingestion</b>	: 13C S/N ASTM 13C S/N ASTM doped	May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach. May be fatal if swallowed and enters airways. Irritating to mouth, throat and stomach.
<b>Skin contact</b>	: 13C S/N ASTM 13C S/N ASTM doped	Causes skin irritation. Defatting to the skin. Causes skin irritation. Defatting to the skin.

**SECTION 11: Toxicological information**

**Eye contact** : 13C S/N ASTM Causes serious eye irritation.  
13C S/N ASTM doped Causes serious eye irritation.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation** : 13C S/N ASTM Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

13C S/N ASTM doped Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

**Ingestion** : 13C S/N ASTM Adverse symptoms may include the following:  
nausea or vomiting

13C S/N ASTM doped Adverse symptoms may include the following:  
nausea or vomiting

**Skin contact** : 13C S/N ASTM Adverse symptoms may include the following:  
irritation  
redness  
dryness  
cracking

13C S/N ASTM doped Adverse symptoms may include the following:  
irritation  
redness  
dryness  
cracking

**Eye contact** : 13C S/N ASTM 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

**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**

**General** : 13C S/N ASTM Causes damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

13C S/N ASTM doped Causes damage to organs through prolonged or repeated exposure. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.

**Carcinogenicity** : 13C S/N ASTM May cause cancer. Risk of cancer depends on duration and level of exposure.

13C S/N ASTM doped May cause cancer. Risk of cancer depends on duration and level of exposure.

**Mutagenicity** : 13C S/N ASTM May cause genetic defects.

13C S/N ASTM doped May cause genetic defects.

**Teratogenicity** : 13C S/N ASTM No known significant effects or critical hazards.

13C S/N ASTM doped No known significant effects or critical hazards.

**Developmental effects** : 13C S/N ASTM No known significant effects or critical hazards.

13C S/N ASTM doped No known significant effects or critical hazards.

## SECTION 11: Toxicological information

<b>Fertility effects</b>	: 13C S/N ASTM	No known significant effects or critical hazards.
	: 13C S/N ASTM doped	No known significant effects or critical hazards.
<b>Toxicokinetics</b>		
<b>Absorption</b>	: 13C S/N ASTM	Not available.
	: 13C S/N ASTM doped	Not available.
<b>Distribution</b>	: 13C S/N ASTM	Not available.
	: 13C S/N ASTM doped	Not available.
<b>Metabolism</b>	: 13C S/N ASTM	Not available.
	: 13C S/N ASTM doped	Not available.
<b>Elimination</b>	: 13C S/N ASTM	Not available.
	: 13C S/N ASTM doped	Not available.
<b>Other information</b>	: Not available.	

## SECTION 12: Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>13C S/N ASTM</b> ( <sup>2</sup> H <sub>6</sub> )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
1,4-Dioxane	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
	Acute LC50 6700000 µg/l Marine water	Fish - Menidia beryllina	96 hours
<b>13C S/N ASTM doped</b> ( <sup>2</sup> H <sub>6</sub> )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
1,4-Dioxane	Chronic NOEC 1.5 to 5.4 ul/L Marine water	Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	4 weeks
	Acute LC50 6700000 µg/l Marine water	Fish - Menidia beryllina	96 hours

### 12.2 Persistence and degradability

**Conclusion/Summary** : Not available.

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>13C S/N ASTM</b> ( <sup>2</sup> H <sub>6</sub> )Benzene 1,4-Dioxane	2.13	11	low
	-0.42	0.3 to 0.7	low
<b>13C S/N ASTM doped</b> ( <sup>2</sup> H <sub>6</sub> )Benzene 1,4-Dioxane	2.13	11	low
	-0.42	0.3 to 0.7	low



**SECTION 12: Ecological information****12.4 Mobility in soil**

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

**12.5 Results of PBT and vPvB assessment**

**PBT** : Not applicable.

**vPvB** : Not applicable.

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

**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Product**

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

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

**Packaging**

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

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

**SECTION 14: Transport information**

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

**Regulatory information**

**ADR/RID / IMDG / IATA** : Not regulated.

**Additional information** : **Remarks**  
De minimis quantities

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

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorisation****Substances of very high concern**

None of the components are listed.

## SECTION 15: Regulatory information

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Restricted to professional users.

### Other EU regulations

**Europe inventory** : All components are listed or exempted.

**Black List Chemicals** : Not listed

**Priority List Chemicals** : Listed

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

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

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
<b>13C S/N ASTM</b> ( <sup>2</sup> H <sub>6</sub> )Benzene 1,4-Dioxane	Carc. 1A, H350 Carc. 2, H351	Muta. 1B, H340 -	- -	- -
<b>13C S/N ASTM doped</b> ( <sup>2</sup> H <sub>6</sub> )Benzene 1,4-Dioxane	Carc. 1A, H350 Carc. 2, H351	Muta. 1B, H340 -	- -	- -

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

## SECTION 16: Other information

Indicates information that has changed from previously issued version.

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

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

Classification	Justification
<b>13C S/N ASTM</b> Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H335 (Respiratory tract irritation) STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 3, H412	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Expert judgment Calculation method
<b>13C S/N ASTM doped</b> Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H335 (Respiratory tract irritation)	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method

**Date of issue/Date of revision** : 19/12/2013

**SECTION 16: Other information**

STOT RE 1, H372 Asp. Tox. 1, H304 Aquatic Chronic 3, H412	Calculation method Expert judgment Calculation method
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**Full text of abbreviated H statements** : **13C S/N ASTM**

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

**13C S/N ASTM doped**

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

**Full text of classifications [CLP/GHS]** : **13C S/N ASTM**

Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Carc. 1A, H350	CARCINOGENICITY - Category 1A
Carc. 2, H351	CARCINOGENICITY - Category 2
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 2, H225	FLAMMABLE LIQUIDS - Category 2
Muta. 1B, H340	GERM CELL MUTAGENICITY - Category 1B
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 1, H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
STOT SE 3, H335 (Respiratory tract irritation)	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

**13C S/N ASTM doped**

Aquatic Chronic 3, H412	LONG-TERM AQUATIC HAZARD - Category 3
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Carc. 1A, H350	CARCINOGENICITY - Category 1A
Carc. 2, H351	CARCINOGENICITY - Category 2
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 2, H225	FLAMMABLE LIQUIDS - Category 2
Muta. 1B, H340	GERM CELL MUTAGENICITY - Category 1B
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
STOT RE 1, H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
STOT SE 3, H335 (Respiratory tract irritation)	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

**SECTION 16: Other information**

**Full text of abbreviated R phrases** : 13C S/N ASTM

R11- Highly flammable.  
 R19- May form explosive peroxides.  
 R45- May cause cancer.  
 R40- Limited evidence of a carcinogenic effect.  
 R46- May cause heritable genetic damage.  
 R48/23/24/25- Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.  
 R65- Also harmful: may cause lung damage if swallowed.  
 R36/37- Irritating to eyes and respiratory system.  
 R36/38- Irritating to eyes and skin.  
 R36/37/38- Irritating to eyes, respiratory system and skin.  
 R66- Repeated exposure may cause skin dryness or cracking.

13C S/N ASTM doped

R11- Highly flammable.  
 R10- Flammable.  
 R19- May form explosive peroxides.  
 R45- May cause cancer.  
 R40- Limited evidence of a carcinogenic effect.  
 R46- May cause heritable genetic damage.  
 R48/23/24/25- Also toxic: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.  
 R65- Also harmful: may cause lung damage if swallowed.  
 R36/37- Irritating to eyes and respiratory system.  
 R36/38- Irritating to eyes and skin.  
 R36/37/38- Irritating to eyes, respiratory system and skin.  
 R66- Repeated exposure may cause skin dryness or cracking.

**Full text of classifications [DSD/DPD]** : 13C S/N ASTM

F - Highly flammable  
 Carc. Cat. 1 - Carcinogen category 1  
 Carc. Cat. 3 - Carcinogen category 3  
 Muta. Cat. 2 - Mutagen category 2  
 T - Toxic  
 Xn - Harmful  
 Xi - Irritant  
 F - Highly flammable  
 Carc. Cat. 1 - Carcinogen category 1  
 Carc. Cat. 3 - Carcinogen category 3  
 Muta. Cat. 2 - Mutagen category 2  
 T - Toxic  
 Xn - Harmful  
 Xi - Irritant

13C S/N ASTM doped

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