

SAFETY DATA SHEET



NMR Sample Kit, non-precursor Part Number 190350515

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

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

1.1 Product identifier

Product name	: NMR Sample Kit, non-precursor Part Number 190350515		
Part No. (Kit)	: 190350515		
Part No.	: Hi Temp Cal	190350679	
	: Lo Temp Cal	190350680	
	: Autotest, no salt	190350606	
	: 13C S/N ASTM	190350669	
	: 19F S/N	190350682	
	: 15N S/N	190350683	

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

Identified uses	
Analytical chemistry.	
6 x 250 µl	
Sealed NMR Tube	
Hi Temp Cal	250 µl
Lo Temp Cal	250 µl
Autotest, no salt	250 µl
13C S/N ASTM	250 µl
19F S/N	250 µl
15N S/N	250 µl

1.3 Details of the supplier of the safety data sheet

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

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

1.4 Emergency telephone number

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

SECTION 2: Hazards identification

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

2.1 Classification of the substance or mixture

Product definition	: Hi Temp Cal	Mono-constituent substance (encapsulated in article)
	: Lo Temp Cal	Mono-constituent substance (encapsulated in article)
	: Autotest, no salt	Mixture (encapsulated in article)
	: 13C S/N ASTM	Mixture (encapsulated in article)
	: 19F S/N	Mixture (encapsulated in article)
	: 15N S/N	Mixture (encapsulated in article)

Date of issue/Date of revision : 31/12/2015

SECTION 2: Hazards identification

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

Hi Temp Cal

H302 ACUTE TOXICITY (oral) - Category 4

Lo Temp Cal

H225 FLAMMABLE LIQUIDS - Category 2
 H301 ACUTE TOXICITY (oral) - Category 3
 H311 ACUTE TOXICITY (dermal) - Category 3
 H331 ACUTE TOXICITY (inhalation) - Category 3
 H370 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1

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

19F S/N

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

15N S/N

H360D TOXIC TO REPRODUCTION (Unborn child) - Category 1B

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

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

2.2 Label elements

Hazard pictograms



Signal word

: Hi Temp Cal Warning
 Lo Temp Cal Danger
 Autotest, no salt No signal word.
 13C S/N ASTM Danger
 19F S/N Danger
 15N S/N Danger

Hazard statements

: Hi Temp Cal **GHS07** - Harmful if swallowed.
 Lo Temp Cal **GHS02** - Highly flammable liquid and vapour.
GHS06 - Toxic if swallowed.
 Toxic in contact with skin.
 Toxic if inhaled.
GHS08 - Causes damage to organs.
 Autotest, no salt No known significant effects or critical hazards.
 13C S/N ASTM **GHS02** - Highly flammable liquid and vapour.

SECTION 2: Hazards identification**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.

19F S/N

GHS02 -

Highly flammable liquid and vapour.

GHS07 -

Causes skin 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.

15N S/N

GHS08 -

May damage the unborn child.

Precautionary statements**Prevention**

: Hi Temp Cal

P270 - Do not eat, drink or smoke when using this product.

P264 - Wash hands thoroughly after handling.

Lo Temp Cal

P280 - Wear protective gloves. Wear eye or face protection.

Wear protective clothing.

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.

P260 - Do not breathe vapour.

Autotest, no salt
13C S/N ASTM

Not applicable.

P201 - Obtain special instructions before use.

P280 - Wear protective gloves. Wear eye or face protection.

Wear protective clothing.

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.

P260 - Do not breathe vapour.

19F S/N

P201 - Obtain special instructions before use.

P280 - Wear protective gloves. Wear eye or face protection.

Wear protective clothing.

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.

P260 - Do not breathe vapour.

15N S/N

P201 - Obtain special instructions before use.

P280 - Wear protective gloves. Wear eye or face protection.

Wear protective clothing.

Response

: Hi Temp Cal

P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.

Lo Temp Cal

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or physician.

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

Autotest, no salt

Not applicable.

SECTION 2: Hazards identification

	13C S/N ASTM	P304 + P340 - IF INHALED: Remove person to fresh air and keep 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.
	19F S/N	P301 + P310 + P331 - IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting. P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
	15N S/N	P308 + P313 - IF exposed or concerned: Get medical attention.
Storage	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	Not applicable. P235 - Keep cool. Not applicable. P235 - Keep cool. P235 - Keep cool. P405 - Store locked up.
Disposal	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	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. Not applicable. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations. P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazardous ingredients	: Hi Temp Cal Ethanediol Lo Temp Cal Methanol 13C S/N ASTM (² H ₆)benzene 1,4-Dioxane 19F S/N (² H ₆)benzene 15N S/N Formamide	
Supplemental label elements	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	Not applicable. Not applicable. Not applicable. Not applicable. Not applicable. Not applicable.
Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	Not applicable. Not applicable. Not applicable. Restricted to professional users. Restricted to professional users. Restricted to professional users.

Special packaging requirements

SECTION 2: Hazards identification

Tactile warning of danger	Hi Temp Cal	Not applicable.
	Lo Temp Cal	Not applicable.
	Autotest, no salt	Not applicable.
	13C S/N ASTM	Not applicable.
	19F S/N	Not applicable.
	15N S/N	Not applicable.

2.3 Other hazards

Other hazards which do not result in classification	Hi Temp Cal	None known.
	Lo Temp Cal	None known.
	Autotest, no salt	None known.
	13C S/N ASTM	Prolonged or repeated contact may dry skin and cause irritation.
	19F S/N	Prolonged or repeated contact may dry skin and cause irritation.
	15N S/N	None known.

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.

3.2 Mixtures	Hi Temp Cal	Mono-constituent substance (encapsulated in article)
	Lo Temp Cal	Mono-constituent substance (encapsulated in article)
	Autotest, no salt	Mixture (encapsulated in article)
	13C S/N ASTM	Mixture (encapsulated in article)
	19F S/N	Mixture (encapsulated in article)
	15N S/N	Mixture (encapsulated in article)

Product/ingredient name	Identifiers	%	Classification	Type
Hi Temp Cal Ethanediol	EC: 203-473-3 CAS: 107-21-1 Index: 603-027-00-1	100	Acute Tox. 4, H302	[A]
Lo Temp Cal Methanol	CAS: 67-56-1 Index: 603-001-00-X	100	Flam. Liq. 2, H225 Acute Tox. 3, H301 Acute Tox. 3, H311 Acute Tox. 3, H331 STOT SE 1, H370	[A]
13C S/N ASTM (² H ₆)benzene	EC: 214-061-8 CAS: 1076-43-3 Index: 601-020-00-8	≥50 - ≤75	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	≥25 - ≤50	Flam. Liq. 2, H225 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335 EUH019 EUH066	[1] [2]
19F S/N (² H ₆)benzene	EC: 214-061-8 CAS: 1076-43-3	≥90	Flam. Liq. 2, H225 Skin Irrit. 2, H315	[1] [2]

SECTION 3: Composition/information on ingredients

15N S/N Formamide	Index: 601-020-00-8		Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304	
	EC: 200-842-0 CAS: 75-12-7 Index: 616-052-00-8	≥90	Repr. 1B, H360D (Unborn child)	[1] [2]
			See Section 16 for the full text of the H statements declared above.	

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

Type

- [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
- [A] Constituent
- [B] Impurity
- [C] Stabilising additive

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact	: Hi Temp Cal	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.
	Lo Temp Cal	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 necessary, call a poison center or physician.
	Autotest, no salt	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.
	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.
	19F S/N	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
	15N S/N	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
Inhalation	: Hi Temp Cal	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 adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a

SECTION 4: First aid measures

Lo Temp Cal	collar, tie, belt or waistband. 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.
Autotest, no salt	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
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.
19F S/N	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
15N S/N	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Skin contact	: Hi Temp Cal Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Lo Temp Cal	Wash with plenty of soap and 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. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Autotest, no salt	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
13C S/N ASTM	Wash skin thoroughly with soap and water or use recognised skin cleanser. Remove contaminated clothing

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		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. 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.
	19F S/N	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. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
	15N S/N	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	: Hi Temp Cal	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.
	Lo Temp Cal	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. 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. 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.
	Autotest, no salt	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.
	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.

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

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

SECTION 4: First aid measures

Eye contact	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. Causes serious eye irritation. No known significant effects or critical hazards.
Inhalation	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. Toxic if inhaled. No known significant effects or critical hazards. May cause respiratory irritation. No known significant effects or critical hazards. No known significant effects or critical hazards.
Skin contact	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. Toxic in contact with skin. No known significant effects or critical hazards. Causes skin irritation. Defatting to the skin. Causes skin irritation. Defatting to the skin. No known significant effects or critical hazards.
Ingestion	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	Harmful if swallowed. Toxic if swallowed. No known significant effects or critical hazards. May be fatal if swallowed and enters airways. May be fatal if swallowed and enters airways. No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No specific data. No specific data. No specific data. Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: pain or irritation watering redness No specific data.
Inhalation	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No specific data. No specific data. No specific data. Adverse symptoms may include the following: respiratory tract irritation coughing No specific data. Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Skin contact	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No specific data. No specific data. No specific data. Adverse symptoms may include the following: irritation redness dryness cracking Adverse symptoms may include the following: irritation redness dryness cracking Adverse symptoms may include the following: reduced foetal weight

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		increase in foetal deaths skeletal malformations
Ingestion	: Hi Temp Cal	No specific data.
	Lo Temp Cal	No specific data.
	Autotest, no salt	No specific data.
	13C S/N ASTM	Adverse symptoms may include the following: nausea or vomiting
	19F S/N	Adverse symptoms may include the following: nausea or vomiting
	15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician	: Hi Temp Cal	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Lo Temp Cal	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.
	13C S/N ASTM	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	19F S/N	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	15N 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.
Specific treatments	: Hi Temp Cal	No specific treatment.
	Lo Temp Cal	No specific treatment.
	Autotest, no salt	No specific treatment.
	13C S/N ASTM	No specific treatment.
	19F S/N	No specific treatment.
	15N S/N	No specific treatment.

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

Suitable extinguishing media	: Hi Temp Cal	Use an extinguishing agent suitable for the surrounding fire.
	Lo Temp Cal	Use dry chemical, CO ₂ , water spray (fog) or foam.
	Autotest, no salt	Use an extinguishing agent suitable for the surrounding fire.
	13C S/N ASTM	Use dry chemical, CO ₂ , water spray (fog) or foam.
	19F S/N	Use dry chemical, CO ₂ , water spray (fog) or foam.
	15N S/N	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	: Hi Temp Cal	None known.
	Lo Temp Cal	Do not use water jet.
	Autotest, no salt	None known.
	13C S/N ASTM	Do not use water jet.
	19F S/N	Do not use water jet.
	15N S/N	None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture	: Hi Temp Cal	In a fire or if heated, a pressure increase will occur and the container may burst.
	Lo Temp Cal	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.
	Autotest, no salt	In a fire or if heated, a pressure increase will occur and the

SECTION 5: Firefighting measures

	13C S/N ASTM	container may burst. 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.
	19F S/N	Highly flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.
	15N S/N	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous combustion products	: Hi Temp Cal	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	Lo Temp Cal	Decomposition products may include the following materials: carbon dioxide carbon monoxide Formaldehyde.
	Autotest, no salt	No specific data.
	13C S/N ASTM	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	19F S/N	Decomposition products may include the following materials: carbon dioxide carbon monoxide
	15N S/N	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides sulfur oxides

5.3 Advice for firefighters

Special precautions for fire-fighters	: Hi Temp Cal	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.
	Lo Temp Cal	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.
	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.
	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.
	19F S/N	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
	15N S/N	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

SECTION 5: Firefighting measures

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

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel	: Hi Temp Cal	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	Lo Temp Cal	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. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
	Autotest, no salt	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
	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.

SECTION 6: Accidental release measures

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.

19F S/N

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

15N S/N

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders

: Hi Temp Cal

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".

Lo Temp Cal

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".

Autotest, no salt

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

13C S/N ASTM

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

19F S/N

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

15N S/N

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

6.2 Environmental precautions

: Hi Temp Cal

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).

Lo Temp Cal

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).

Autotest, no salt

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).

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).

19F S/N

Avoid dispersal of spilt material and runoff and contact with

SECTION 6: Accidental release measures

	soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
15N S/N	Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Hi Temp Cal

	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.
Lo Temp Cal	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.
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.
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.
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.
15N S/N	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

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 : Hi Temp Cal

	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. 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.
Lo Temp Cal	Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapour 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

SECTION 7: Handling and storage

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.

Autotest, no salt

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

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. 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.

19F S/N

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not swallow. 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.

15N S/N

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene

: Hi Temp Cal

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.

Lo Temp Cal

Eating, drinking and smoking should be prohibited in areas

SECTION 7: Handling and storage

Autotest, no salt	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, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
13C S/N ASTM	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
19F S/N	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
15N S/N	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

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

SECTION 7: Handling and storage

19F S/N

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.

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

15N S/N

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

Seveso Directive - Reporting thresholds (in tonnes)

Named substances

Name	Notification and MAPP threshold	Safety report threshold
Lo Temp Cal Methanol	500	5000

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
13C S/N ASTM P5c: Flammable liquids 2 and 3 not falling under P5a or P5b	5000	50000
19F S/N P5c: Flammable liquids 2 and 3 not falling under P5a or P5b	5000	50000

7.3 Specific end use(s)

Recommendations

- : Hi Temp Cal Industrial applications, Professional applications.
- : Lo Temp Cal Industrial applications, Professional applications.
- : Autotest, no salt Industrial applications, Professional applications.
- : 13C S/N ASTM Industrial applications, Professional applications.
- : 19F S/N Industrial applications, Professional applications.
- : 15N S/N Industrial applications, Professional applications.

Industrial sector specific solutions

- : Hi Temp Cal Not applicable.
- : Lo Temp Cal Not applicable.
- : Autotest, no salt Not applicable.
- : 13C S/N ASTM Not applicable.
- : 19F S/N Not applicable.
- : 15N S/N Not applicable.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Occupational exposure limits**

Product/ingredient name	Exposure limit values
Hi Temp Cal ethanediol	EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin. TWA: 10 mg/m ³ 8 hours. Form: Particulate STEL: 104 mg/m ³ 15 minutes. Form: Vapour TWA: 52 mg/m ³ 8 hours. Form: Vapour STEL: 40 ppm 15 minutes. Form: Vapour TWA: 20 ppm 8 hours. Form: Vapour
Lo Temp Cal methanol	EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin. STEL: 333 mg/m ³ 15 minutes. STEL: 250 ppm 15 minutes. TWA: 266 mg/m ³ 8 hours. TWA: 200 ppm 8 hours.
13C S/N ASTM benzene	EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin. TWA: 1 ppm 8 hours.
1,4-dioxane	EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin. TWA: 20 ppm 8 hours. TWA: 73 mg/m ³ 8 hours.
19F S/N benzene	EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin. TWA: 1 ppm 8 hours.
15N S/N formamide	EH40/2005 WELs (United Kingdom (UK), 12/2011). STEL: 56 mg/m ³ 15 minutes. STEL: 30 ppm 15 minutes. TWA: 37 mg/m ³ 8 hours. TWA: 20 ppm 8 hours.

Recommended monitoring procedures

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

DNELs/DMELs

No DNELs/DMELs available.

PNECs

No PNECs available

SECTION 8: Exposure controls/personal protection**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.

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 : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

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

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

Physical state	: Hi Temp Cal	Liquid. [Viscous liquid.]
	Lo Temp Cal	Liquid. [Clear.]
	Autotest, no salt	Liquid.
	13C S/N ASTM	Liquid.
	19F S/N	Liquid.
Colour	15N S/N	Liquid.
	: Hi Temp Cal	Colourless.
	Lo Temp Cal	Colourless.
	Autotest, no salt	Not available.
	13C S/N ASTM	Colourless.
	19F S/N	Not available.
	15N S/N	Not available.

SECTION 9: Physical and chemical properties

Odour	: Hi Temp Cal	Slight
	Lo Temp Cal	Characteristic.
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
Odour threshold	: Hi Temp Cal	Not available.
	Lo Temp Cal	Not available.
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
pH	: Hi Temp Cal	Not available.
	Lo Temp Cal	Not available.
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
Melting point/freezing point	: Hi Temp Cal	-13°C
	Lo Temp Cal	-97.8°C
	Autotest, no salt	3.81°C
	13C S/N ASTM	6.8°C
	19F S/N	5°C
	15N S/N	Not available.
Initial boiling point and boiling range	: Hi Temp Cal	198°C
	Lo Temp Cal	60.9°C
	Autotest, no salt	101.1°C
	13C S/N ASTM	79.1°C
	19F S/N	80°C
	15N S/N	Not available.
Flash point	: Hi Temp Cal	Closed cup: 111°C Open cup: 115°C
	Lo Temp Cal	Closed cup: 15°C [Setaflash.]
	Autotest, no salt	Not available.
	13C S/N ASTM	Closed cup: -18 to 23°C
	19F S/N	Closed cup: -11.11°C
	15N S/N	Closed cup: 87.8°C
Evaporation rate	: Hi Temp Cal	0.01 (butyl acetate = 1)
	Lo Temp Cal	2.1 (butyl acetate = 1)
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
Flammability (solid, gas)	: Hi Temp Cal	Not applicable.
	Lo Temp Cal	Not applicable.
	Autotest, no salt	Not applicable.
	13C S/N ASTM	Not applicable.
	19F S/N	Not applicable.
	15N S/N	Not applicable.
Upper/lower flammability or explosive limits	: Hi Temp Cal	Lower: 3.2% Upper: 15.3%
	Lo Temp Cal	Lower: 6% Upper: 44%
	Autotest, no salt	Not available.
	13C S/N ASTM	Lower: 1.3% Upper: 8%
	19F S/N	Not available.
	15N S/N	Not available.

SECTION 9: Physical and chemical properties

Vapour pressure	: Hi Temp Cal	0.007 kPa [room temperature]
	Lo Temp Cal	16.9 kPa [room temperature]
	Autotest, no salt	Not available.
	13C S/N ASTM	22.1 kPa [room temperature]
	19F S/N	Not available.
Vapour density	15N S/N	Not available.
	: Hi Temp Cal	2.1 [Air = 1]
	Lo Temp Cal	1.1 [Air = 1]
	Autotest, no salt	Not available.
	13C S/N ASTM	2.77 [Air = 1]
Relative density	19F S/N	Not available.
	15N S/N	Not available.
	: Hi Temp Cal	1.1
	Lo Temp Cal	0.79
	Autotest, no salt	1.1 [(D2O)]
Solubility(ies)	13C S/N ASTM	0.95
	19F S/N	Not available.
	15N S/N	Not available.
	: Hi Temp Cal	Easily soluble in the following materials: cold water, hot water, methanol and acetone.
	Lo Temp Cal	Easily soluble in the following materials: cold water, hot water, methanol, n-octanol and acetone.
Partition coefficient: n-octanol/water	Autotest, no salt	Easily soluble in the following materials: cold water and hot water.
	13C S/N ASTM	Easily soluble in the following materials: cold water and hot water.
	19F S/N	Insoluble in the following materials: cold water and hot water.
	15N S/N	Soluble in the following materials: cold water and hot water.
	: Hi Temp Cal	-1.93
Auto-ignition temperature	Lo Temp Cal	-0.77
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
Decomposition temperature	: Hi Temp Cal	398°C
	Lo Temp Cal	455°C
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
Viscosity	15N S/N	Not available.
	: Hi Temp Cal	Dynamic (room temperature): 16.1 mPa·s
	Lo Temp Cal	Dynamic (room temperature): 0.54 to 0.59 mPa·s
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
Explosive properties	19F S/N	Not available.
	15N S/N	Not available.
	: Hi Temp Cal	Not available.
	Lo Temp Cal	Not available.
	Autotest, no salt	Not available.
Date of issue/Date of revision	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.
	: 31/12/2015	

SECTION 9: Physical and chemical properties

Oxidising properties	: Hi Temp Cal	Not available.
	Lo Temp Cal	Not available.
	Autotest, no salt	Not available.
	13C S/N ASTM	Not available.
	19F S/N	Not available.
	15N S/N	Not available.

9.2 Other information

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity	: Hi Temp Cal	No specific test data related to reactivity available for this product or its ingredients.
	Lo Temp Cal	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.
	13C S/N ASTM	No specific test data related to reactivity available for this product or its ingredients.
	19F S/N	No specific test data related to reactivity available for this product or its ingredients.
	15N S/N	No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability	: Hi Temp Cal	The product is stable.
	Lo Temp Cal	The product is stable.
	Autotest, no salt	The product is stable.
	13C S/N ASTM	The product is stable.
	19F S/N	The product is stable.
	15N S/N	The product is stable.

10.3 Possibility of hazardous reactions	: Hi Temp Cal	Under normal conditions of storage and use, hazardous reactions will not occur.
	Lo Temp Cal	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.
	13C S/N ASTM	Under normal conditions of storage and use, hazardous reactions will not occur.
	19F S/N	Under normal conditions of storage and use, hazardous reactions will not occur.
	15N S/N	Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid	: Hi Temp Cal	No specific data.
	Lo Temp Cal	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 vapour to accumulate in low or confined areas.
	Autotest, no salt	No specific data.
	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 vapour to accumulate in low or confined areas.
	19F S/N	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.
	15N S/N	No specific data.

SECTION 10: Stability and reactivity

10.5 Incompatible materials : Hi Temp Cal May react or be incompatible with oxidising materials.
 Lo Temp Cal Reactive or incompatible with the following materials:
 oxidizing materials
 Autotest, no salt May react or be incompatible with oxidising materials.
 13C S/N ASTM Reactive or incompatible with the following materials:
 oxidizing materials
 19F S/N Reactive or incompatible with the following materials:
 oxidizing materials
 15N S/N May react or be incompatible with oxidising materials.

10.6 Hazardous decomposition products : Hi Temp Cal Under normal conditions of storage and use, hazardous decomposition products should not be produced.
 Lo Temp Cal 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.
 13C S/N ASTM 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.
 15N S/N 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
Hi Temp Cal Ethanediol	LD50 Oral	Rat	4700 mg/kg	-
Lo Temp Cal Methanol	LC50 Inhalation Vapour	Rat	145000 ppm	1 hours
	LC50 Inhalation Vapour	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
13C S/N ASTM (² H ₆)benzene	LD50 Oral	Rat	930 mg/kg	-
1,4-Dioxane	LD50 Oral	Rat	4200 mg/kg	-
19F S/N (² H ₆)benzene	LD50 Oral	Rat	930 mg/kg	-
15N S/N Formamide	LD50 Dermal	Rabbit	17 g/kg	-
	LD50 Oral	Rat	4000 mg/kg	-

Acute toxicity estimates

Route	ATE value
Hi Temp Cal Oral	500 mg/kg
Autotest, no salt Oral	100030 mg/kg
Dermal	300090 mg/kg
Inhalation (vapours)	3000.9 mg/l

Irritation/Corrosion

SECTION 11: Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hi Temp Cal Ethanediol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	1 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	6 hours 1440 milligrams	-
	Skin - Mild irritant	Rabbit	-	555 milligrams	-
Lo Temp Cal Methanol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	40 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
13C S/N ASTM (² H ₆)benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
1,4-Dioxane	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Skin - Mild irritant	Rabbit	-	515 milligrams	-
19F S/N (² H ₆)benzene	Eyes - Moderate irritant	Rabbit	-	88 milligrams	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Rat	-	8 hours 60 microliters	-
	Skin - Mild irritant	Rabbit	-	24 hours 15 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
15N S/N Formamide	Eyes - Severe irritant	Rabbit	-	100 milligrams	-

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
Lo Temp Cal Methanol	Category 1	Not determined	Not determined
13C S/N ASTM 1,4-Dioxane	Category 3	Not applicable.	Respiratory tract irritation

SECTION 11: Toxicological information

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
13C S/N ASTM (² H ₆)benzene	Category 1	Not determined	Not determined
19F S/N (² H ₆)benzene	Category 1	Not determined	Not determined

Aspiration hazard

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

Information on likely routes of exposure

: Hi Temp Cal	Routes of entry anticipated: Oral, Dermal, Inhalation.
Lo Temp Cal	Routes of entry anticipated: Oral, Dermal, Inhalation.
Autotest, no salt	Routes of entry anticipated: Oral, Dermal, Inhalation.
13C S/N ASTM	Routes of entry anticipated: Oral, Dermal, Inhalation.
19F S/N	Routes of entry anticipated: Oral, Dermal, Inhalation.
15N S/N	Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Inhalation	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. Toxic if inhaled. No known significant effects or critical hazards. May cause respiratory irritation. No known significant effects or critical hazards. No known significant effects or critical hazards.
Ingestion	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	Harmful if swallowed. Toxic if swallowed. No known significant effects or critical hazards. May be fatal if swallowed and enters airways. May be fatal if swallowed and enters airways. No known significant effects or critical hazards.
Skin contact	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. Toxic in contact with skin. No known significant effects or critical hazards. Causes skin irritation. Defatting to the skin. Causes skin irritation. Defatting to the skin. No known significant effects or critical hazards.
Eye contact	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. Causes serious eye irritation. Causes serious eye irritation. No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

SECTION 11: Toxicological information

Inhalation	:	Hi Temp Cal	No specific data.
		Lo Temp Cal	No specific data.
		Autotest, no salt	No specific data.
		13C S/N ASTM	Adverse symptoms may include the following: respiratory tract irritation coughing
		19F S/N	No specific data.
		15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Ingestion	:	Hi Temp Cal	No specific data.
		Lo Temp Cal	No specific data.
		Autotest, no salt	No specific data.
		13C S/N ASTM	Adverse symptoms may include the following: nausea or vomiting
		19F S/N	Adverse symptoms may include the following: nausea or vomiting
		15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Skin contact	:	Hi Temp Cal	No specific data.
		Lo Temp Cal	No specific data.
		Autotest, no salt	No specific data.
		13C S/N ASTM	Adverse symptoms may include the following: irritation redness dryness cracking
		19F S/N	Adverse symptoms may include the following: irritation redness dryness cracking
		15N S/N	Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Eye contact	:	Hi Temp Cal	No specific data.
		Lo Temp Cal	No specific data.
		Autotest, no salt	No specific data.
		13C S/N ASTM	Adverse symptoms may include the following: pain or irritation watering redness
		19F S/N	Adverse symptoms may include the following: pain or irritation watering redness
		15N S/N	No specific data.

Delayed and immediate effects as well as 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.

SECTION 11: Toxicological information

Potential delayed effects : Not available.

Potential chronic health effects

General	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. 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. 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. No known significant effects or critical hazards.
Carcinogenicity	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards. May cause cancer. Risk of cancer depends on duration and level of exposure. May cause cancer. Risk of cancer depends on duration and level of exposure. No known significant effects or critical hazards.
Mutagenicity	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	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. May cause genetic defects. No known significant effects or critical hazards.
Teratogenicity	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards. May damage the unborn child.
Developmental effects	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards.
Fertility effects	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	No known significant effects or critical hazards. No known significant effects or critical hazards.
Other information	: Hi Temp Cal Lo Temp Cal Autotest, no salt 13C S/N ASTM 19F S/N 15N S/N	Not available. Adverse symptoms may include the following: blurred or double vision, Eye contact can result in corneal damage or blindness. Repeated or prolonged exposure to the substance can produce liver damage. Not available. Not available. Not available. Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Hi Temp Cal Ethanediol	Acute LC50 10000000 µg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute LC50 41000000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 8050000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
Lo Temp Cal Methanol	Acute EC50 24500000 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - Crangon crangon - Adult	48 hours
	Acute LC50 290 mg/l Fresh water Chronic NOEC 9.96 mg/l Marine water	Fish - Danio rerio - Egg Algae - Ulva pertusa	96 hours 96 hours
13C S/N ASTM (² H ₆)benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	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 98 mg/l Fresh water Chronic NOEC 1.5 to 5.4 ul/L Marine water	Daphnia - Daphnia magna Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	21 days 4 weeks
	Acute LC50 6700000 µg/l Marine water	Fish - Menidia beryllina	96 hours
19F S/N (² H ₆)benzene	Acute EC50 29000 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 1600000 µg/l Fresh water	Algae - Selenastrum sp.	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 98 mg/l Fresh water Chronic NOEC 1.5 to 5.4 ul/L Marine water	Daphnia - Daphnia magna Fish - Morone saxatilis - Juvenile (Fledgling, Hatchling, Weanling)	21 days 4 weeks

12.2 Persistence and degradability

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Hi Temp Cal Ethanediol	-	-	Readily
Lo Temp Cal Methanol	-	-	Readily

12.3 Bioaccumulative potential

SECTION 12: Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Hi Temp Cal			
Ethenediol	-1.93	-	low
Ethenediol	-1.36	-	low
Lo Temp Cal			
Methanol	-0.77	<10	low
13C S/N ASTM			
(² H ₆)benzene	2.13	11	low
1,4-Dioxane	-0.42	0.3 to 0.7	low
19F S/N			
(² H ₆)benzene	2.13	11	low
15N S/N			
Formamide	-0.82	-	low

12.4 Mobility in soil

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

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

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

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

European waste catalogue (EWC)

Waste code	Waste designation
Lo Temp Cal 07 07 04*	other organic solvents, washing liquids and mother liquors

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. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

This 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

ADR/RID / IMDG / IATA : Not regulated.

Additional information : **Remarks**
De minimis quantities

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of Marpol 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

Annex XIV

None of the components are listed.

Substances of very high concern

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
15N S/N Formamide	Toxic to reproduction	Candidate	ED/87/2012	6/18/2012

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

Hi Temp Cal	Not applicable.
Lo Temp Cal	Not applicable.
Autotest, no salt	Not applicable.
13C S/N ASTM	Restricted to professional users.
19F S/N	Restricted to professional users.
15N S/N	Restricted to professional users.

Other EU regulations

Europe inventory : All components are listed or exempted.

Industrial emissions (integrated pollution prevention and control) - Air : Listed

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
13C S/N ASTM benzene 1,4-dioxane	Carc. 1A, H350 Carc. 2, H351	Muta. 1B, H340 -	- -	- -
19F S/N benzene	Carc. 1A, H350	Muta. 1B, H340	-	-
15N S/N formamide	-	-	Repr. 1B, H360D (Unborn child)	-

Seveso Directive

This product is controlled under the Seveso Directive.

Named substances

SECTION 15: Regulatory information**Name**Lo Temp Cal
Methanol**Danger criteria****Category****13C S/N ASTM**

P5c: Flammable liquids 2 and 3 not falling under P5a or P5b

19F S/N

P5c: Flammable liquids 2 and 3 not falling under P5a or P5b

National regulations

Product/ingredient name	List name	Name on list	Classification	Notes
13C S/N ASTM benzene	UK Occupational Exposure Limits EH40 - WEL	benzene; benzol	Carc.	-
19F S/N benzene	UK Occupational Exposure Limits EH40 - WEL	benzene; benzol	Carc.	-

International regulations**Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists**National inventory**

- Australia** : All components are listed or exempted.
- Canada** : Not determined.
- China** : All components are listed or exempted.
- Japan** : **Japan inventory (ENCS)**: All components are listed or exempted.
Japan inventory (ISHL): All components are listed or exempted.
- Malaysia** : All components are listed or exempted.
- New Zealand** : Not determined.
- Philippines** : Not determined.
- Republic of Korea** : Not determined.
- Taiwan** : All components are listed or exempted.
- Turkey** : Not determined.
- United States** : All components are listed or exempted.

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
Hi Temp Cal Acute Tox. 4, H302	Calculation method
Lo Temp Cal Flam. Liq. 2, H225 Acute Tox. 3, H301 Acute Tox. 3, H311 Acute Tox. 3, H331 STOT SE 1, H370	Regulatory data Regulatory data Regulatory data On basis of test data Regulatory data
13C S/N ASTM Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT SE 3, H335 STOT RE 1, H372 Asp. Tox. 1, H304	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Expert judgment
19F S/N Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Expert judgment
15N S/N Repr. 1B, H360D (Unborn child)	Calculation method

Full text of abbreviated H statements

- Hi Temp Cal**
H302 Harmful if swallowed.
- Lo Temp Cal**
H225 Highly flammable liquid and vapour.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H331 Toxic if inhaled.
H370 Causes damage to organs.
- 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 May cause respiratory irritation.
H340 May cause genetic defects.
H350 May cause cancer.
H351 Suspected of causing cancer.
H372 Causes damage to organs through prolonged or repeated

SECTION 16: Other information

exposure.

19F S/N

H225

H304

H315

H319

H340

H350

H372

Highly flammable liquid and vapour.

May be fatal if swallowed and enters airways.

Causes skin irritation.

Causes serious eye irritation.

May cause genetic defects.

May cause cancer.

Causes damage to organs through prolonged or repeated exposure.

15N S/N

H360D (Unborn child)

May damage the unborn child.

Full text of classifications [CLP/GHS]**Hi Temp Cal**

Acute Tox. 4, H302

ACUTE TOXICITY (oral) - Category 4

Lo Temp Cal

Acute Tox. 3, H301

Acute Tox. 3, H311

Acute Tox. 3, H331

Flam. Liq. 2, H225

STOT SE 1, H370

ACUTE TOXICITY (oral) - Category 3

ACUTE TOXICITY (dermal) - Category 3

ACUTE TOXICITY (inhalation) - Category 3

FLAMMABLE LIQUIDS - Category 2

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1

13C S/N ASTM

Asp. Tox. 1, H304

Carc. 1A, H350

Carc. 2, H351

EUH019

EUH066

Eye Irrit. 2, H319

Flam. Liq. 2, H225

Muta. 1B, H340

Skin Irrit. 2, H315

STOT RE 1, H372

ASPIRATION HAZARD - Category 1

CARCINOGENICITY - Category 1A

CARCINOGENICITY - Category 2

May form explosive peroxides.

Repeated exposure may cause skin dryness or cracking.

SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2

FLAMMABLE LIQUIDS - Category 2

GERM CELL MUTAGENICITY - Category 1B

SKIN CORROSION/IRRITATION - Category 2

SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

STOT SE 3, H335

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

19F S/N

Asp. Tox. 1, H304

Carc. 1A, H350

Eye Irrit. 2, H319

Flam. Liq. 2, H225

Muta. 1B, H340

Skin Irrit. 2, H315

STOT RE 1, H372

ASPIRATION HAZARD - Category 1

CARCINOGENICITY - Category 1A

SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2

FLAMMABLE LIQUIDS - Category 2

GERM CELL MUTAGENICITY - Category 1B

SKIN CORROSION/IRRITATION - Category 2

SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

15N S/N

Repr. 1B, H360D

(Unborn child)

TOXIC TO REPRODUCTION (Unborn child) - Category 1B

Date of issue/ Date of revision

: 31/12/2015

Date of previous issue

: No previous validation.

Version

: 1

Notice to reader

SECTION 16: Other information

Disclaimer: The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.