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Revision: 06/03/2014 Supersedes Revision: 07/10/2013

according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 780010

Product Name: Nitrate Reductase Enzyme Preparation

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:

Company Name: Cayman Chemical Company

1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:
- 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
- 2.1.2 Classification according to Directive 1999/45/EC:

Risk Phrases:

For full text of R- phrases: see SECTION 15.

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word:

GHS Hazard Phrases:

Based on evaluation of currently available data this substance or mixture is not classifiable according to GHS.

GHS Precaution Phrases:

No phrases apply.

GHS Response Phrases:

No phrases apply.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

2.3 Adverse Human Health Material may be irritating to the mucous membranes and upper respiratory tract.

Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.

May cause eye, skin, or respiratory system irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

CAS#/ RTECS#	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	Risk Phrases/ GHS Classification
9029-27-0 NA	Nitrate Reductase	0.0 -5.0 %	NA NA	No phrases apply. No data available.
NA NA	Nitrate Reductase Enzyme Preparation	95.0 -100.0 %	NA NA	No phrases apply. No data available.



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Section 4. First Aid Measures

Description of First AidNo data available. 4.1

Measures:

Contact:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

In Case of Skin

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before

reuse.

In Case of Eye

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes

Contact:

examined and tested by medical personnel.

Wash out mouth with water provided person is conscious. Never give anything by mouth In Case of Ingestion:

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Media: Use water spray to cool fire-exposed containers.

Unsuitable A solid water stream may be inefficient.

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

No data. Flash Pt:

LEL: No data. UEL: No data. **Explosive Limits:**

Autoignition Pt: No data.

5.3 **Fire Fighting** As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

Instructions: approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Avoid raising and breathing dust, and provide adequate ventilation.

Protective Equipment and Emergency

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

Procedures: rubber gloves).

6.2 **Environmental**

Precautions:

Take steps to avoid release into the environment, if safe to do so.

6.3 **Methods and Material** Contain spill and collect, as appropriate.

For Containment and

Transfer to a chemical waste container for disposal in accordance with local regulations.

Cleaning Up:

Section 7. Handling and Storage

7.1 Avoid breathing dust/fume/gas/mist/vapours/spray. **Precautions To Be**

Taken in Handling: Avoid prolonged or repeated exposure.

7.2 **Precautions To Be** Keep container tightly closed.

> Store in accordance with information listed on the product insert. Taken in Storing:

Section 8. Exposure Controls/Personal Protection

8.1 **Exposure Parameters:**

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
9029-27-0	Nitrate Reductase	No data.	No data.	No data.
NA	Nitrate Reductase Enzyme Preparation	No data.	No data.	No data.



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CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
9029-27-0	Nitrate Reductase	No data.	No data.	No data.
NA	Nitrate Reductase Enzyme Preparation	No data.	No data.	No data.

8.2 Exposure Controls:

8.2.1 Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to

(Ventilation etc.): control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective

Lab coat

Clothing:

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

ance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a

safety shower.

Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1	In	formatio	n on	Basic	Physical	and	Chemica	l Propert	ies
-----	----	----------	------	-------	----------	-----	---------	-----------	-----

Physical States: [] Gas [] Liquid [X] Solid

Appearance and Odor: A lyophilized powder

Melting Point:No data.Boiling Point:No data.Flash Pt:No data.Evaporation Rate:No data.

Explosive Limits: LEL: No data. UEL: No data.

Vapor Pressure (vs. Air or

mm Hg):

No data.

Vapor Density (vs. Air = 1):No data.Specific Gravity (Water = 1):No data.Solubility in Water:No data.Autoignition Pt:No data.

9.2 Other Information

Percent Volatile: No data.

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [] Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will occur [] Will not occur [X]

10.4 Conditions To Avoid: No data available.

10.5 Incompatibility - strong oxidizing agents

Materials To Avoid:

10.6 Hazardous phosphorus oxidesDecomposition Or potassium oxides

Byproducts:



11.1

SAFETY DATA SHEET **Nitrate Reductase Enzyme Preparation**

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Section 11. Toxicological Information

Toxicological Effects:

Information on

The toxicological effects of this product have not been thoroughly studied.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

Avoid release into the environment. 12.1 **Toxicity:**

Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

Dispose in accordance with local, state, and federal regulations. 13.1 **Waste Disposal**

Method:

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.

DOT Hazard Class: UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Not dangerous goods.

UN Number: Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
9029-27-0	Nitrate Reductase	No	No	No
NA	Nitrate Reductase Enzyme Preparation	No	No	No

CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
9029-27-0	Nitrate Reductase	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No
NA	Nitrate Reductase Enzyme Preparation	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No



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European Community Hazard Symbol codes:

European Community Risk and Safety Phrases:

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

Regulatory Information This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

Statement: European Directive 67/548/EEC as amended.

Section 16. Other Information

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Additional Information About No data available.

This Product:

Company Policy or

Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.



SAFETY DATA SHEET Nitrate Reductase Cofactor Preparation

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according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 **Product Code:** 780012

> **Product Name:** Nitrate Reductase Cofactor Preparation

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 **Details of the Supplier of the Safety Data Sheet:**

> **Company Name:** Cayman Chemical Company

> > 1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 **Emergency telephone number:**

> CHEMTREC Within USA and Canada: +1 (800)424-9300 **Emergency Contact:**

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:
- 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
- 2.1.2 Classification according to Directive 1999/45/EC:

Risk Phrases:

For full text of R- phrases: see SECTION 15.

- 2.2 **Label Elements:**
- 2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word:

GHS Hazard Phrases:

Based on evaluation of currently available data this substance or mixture is not classifiable according to GHS.

GHS Precaution Phrases:

No phrases apply.

GHS Response Phrases:

No phrases apply.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

2.3 Adverse Human Health Material may be irritating to the mucous membranes and upper respiratory tract.

Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.

May cause eye, skin, or respiratory system irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	Risk Phrases/ GHS Classification
NA NA	Nitrate Reductase Cofactor Preparation	100.0 %	No phrases apply. No data available.



SAFETY DATA SHEET Nitrate Reductase Cofactor Preparation

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Section 4. First Aid Measures

4.1 Description of First AidNo data available.

Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

In Case of Skin

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before

reuse.

In Case of Eye

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes

Contact:

Contact:

examined and tested by medical personnel.

In Case of Ingestion:

Wash out mouth with water provided person is conscious. Never give anything by mouth

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Media: Use water spray to cool fire-exposed containers.

Unsuitable A solid water stream may be inefficient.

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

No data. Flash Pt:

LEL: No data. UEL: No data. **Explosive Limits:**

Autoignition Pt: No data.

5.3 **Fire Fighting**

As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

Instructions:

approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Avoid raising and breathing dust, and provide adequate ventilation.

Protective Equipment and Emergency

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

Procedures: rubber gloves).

6.2 **Environmental** Take steps to avoid release into the environment, if safe to do so.

Precautions:

6.3 **Methods and Material**

For Containment and

Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Cleaning Up:

Section 7. Handling and Storage

7.1 Avoid breathing dust/fume/gas/mist/vapours/spray. **Precautions To Be**

Taken in Handling: Avoid prolonged or repeated exposure.

7.2 **Precautions To Be** Keep container tightly closed.

> Store in accordance with information listed on the product insert. Taken in Storing:

Section 8. Exposure Controls/Personal Protection

8.1 **Exposure Parameters:**

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
NA	Nitrate Reductase Cofactor Preparation	No data.	No data.	No data.



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Nitrate Reductase Cofactor Preparation

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CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
NA	Nitrate Reductase Cofactor Preparation	No data.	No data.	No data.

8.2 **Exposure Controls:**

8.2.1 Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to

control airborne levels below recommended exposure limits. (Ventilation etc.):

8.2.2 Personal protection equipment:

Safety glasses **Eye Protection:**

Compatible chemical-resistant gloves **Protective Gloves:**

Other Protective

Lab coat

Clothing:

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

ance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a

safety shower.

Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties 9.1

[X] Solid **Physical States:** [] Gas [] Liquid

A lyophilized powder **Appearance and Odor:**

No data. **Melting Point: Boiling Point:** No data. Flash Pt: No data. No data. **Evaporation Rate:**

LEL: No data. UEL: No data. **Explosive Limits:**

Vapor Pressure (vs. Air or

mm Hg):

No data.

Vapor Density (vs. Air = 1): No data. Specific Gravity (Water = 1): No data. Solubility in Water: No data. No data. **Autoignition Pt:**

9.2 Other Information

> **Percent Volatile:** No data.

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

Stable [X] 10.2 Stability: Unstable []

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will occur [] Will not occur [X]

10.4 Conditions To Avoid: No data available.

10.5 Incompatibility strong oxidizing agents

Materials To Avoid:

10.6 Hazardous carbon dioxide **Decomposition Or** carbon monoxide

Byproducts: phosphorus oxides sodium oxides



SAFETY DATA SHEET Nitrate Reductase Cofactor Preparation

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Section 11. Toxicological Information

Toxicological Effects:

The toxicological effects of this product have not been thoroughly studied.

NTP? No IARC Monographs? No OSHA Regulated? No Carcinogenicity:

Section 12. Ecological Information

Avoid release into the environment. 12.1 Toxicity:

Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal

11.1 Information on

Method:

Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.

DOT Hazard Class: UN/NA Number:

LAND TRANSPORT (European ADR/RID): 14.1

ADR/RID Shipping Name: Not dangerous goods.

UN Number: Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport

Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
NA	Nitrate Reductase Cofactor Preparation	No	No	No
				•

CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
NA	Nitrate Reductase Cofactor Preparation	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No

European Community Hazard Symbol codes:

European Community Risk and Safety Phrases:

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

Regulatory Information This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

European Directive 67/548/EEC as amended. Statement:

Section 16. Other Information

06/03/2014 Revision Date:

Additional Information About No data available.

This Product:

Company Policy or DISCLAIMER: This information is believed to be accurate and represents the best



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Multi-region format

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Disclaimer:	information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to
	determine the suitability of the information for their particular purposes.



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according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 780014

Product Name: NO Assay Nitrate Standard

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:

Company Name: Cayman Chemical Company

1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:

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

Acute Toxicity: Skin, Category 5

2.1.2 Classification according to Directive 1999/45/EC:

Risk Phrases:

For full text of R- phrases: see SECTION 15.

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word: Warning

GHS Hazard Phrases:

H313: May be harmful in contact with skin.

GHS Precaution Phrases:

No phrases apply.

GHS Response Phrases:

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

2.3 Adverse Human Health Material may be irritating to the mucous membranes and upper respiratory tract.

Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.

May cause eye, skin, or respiratory system irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	Risk Phrases/ GHS Classification
7631-99-4 WC5600000	Sodium Nitrate	< 1.0 %	231-554-3 NA	Xn;O; R22-36/37/38-8 Ox. Sol. 3: H272 Acute Tox.(O) 4: H302 Skin Corr. 2: H315 Eye Damage 2A: H319 Mutagen 2: H341



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				TOST (SE) 2: H371
NA NA	NO Assay Nitrate Standard	>99.0 %		No phrases apply. No data available.
			14/1	140 data available:

Section 4. First Aid Measures

4.1 **Description of First Aid**No data available.

Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

In Case of Skin

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before

reuse.

In Case of Eye

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes

Contact:

Contact:

examined and tested by medical personnel.

Wash out mouth with water provided person is conscious. Never give anything by mouth In Case of Ingestion:

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Media: Use water spray to cool fire-exposed containers.

A solid water stream may be inefficient. Unsuitable

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

No data. Flash Pt:

LEL: No data. **Explosive Limits:** UEL: No data.

Autoignition Pt: No data.

5.3 Fire Fighting As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

approved or equivalent), and full protective gear to prevent contact with skin and eyes. Instructions:

Section 6. Accidental Release Measures

6.1 Protective Precautions, Avoid raising and breathing dust, and provide adequate ventilation.

and Emergency

Protective Equipment As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

Procedures: rubber gloves).

6.2 **Environmental** Take steps to avoid release into the environment, if safe to do so.

Precautions:

6.3 **Methods and Material** Contain spill and collect, as appropriate.

For Containment and

Cleaning Up:

Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 **Precautions To Be** Avoid breathing dust/fume/gas/mist/vapours/spray.

Taken in Handling: Avoid prolonged or repeated exposure.

7.2 Keep container tightly closed. **Precautions To Be**

> Taken in Storing: Store in accordance with information listed on the product insert.



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Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
7631-99-4	Sodium Nitrate	No data.	No data.	No data.
NA	NO Assay Nitrate Standard	No data.	No data.	No data.
CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
7631-99-4	Sodium Nitrate	No data.	No data.	No data.
NA	NO Assay Nitrate Standard	No data.	No data.	No data.

8.2 Exposure Controls:

8.2.1 Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to

(Ventilation etc.): control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective

Lab coat

Clothing:

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

ance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a

safety shower.

Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

). 1	information on	Basic Physical and Che	micai Properties
	D		F 112- 24 F

Physical States:	[]Gas	[] Liquid	[X] 2011a
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Appearance and Odor: A lyophilized powder

Melting Point:No data.Boiling Point:No data.Flash Pt:No data.Evaporation Rate:No data.

Explosive Limits: LEL: No data. UEL: No data.

No data.

Vapor Pressure (vs. Air or

mm Hg):

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Autoignition Pt: No data.



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9.2 Other Information
Percent Volatile:
No data.

Section 10. Stability and Reactivity

10.1 Reactivity:
No data available.

10.2 Stability: Unstable [] Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will occur [] Will not occur [X]

10.4 Conditions To Avoid: No data available.10.5 Incompatibility - strong oxidizing agents

Materials To Avoid:

10.6 Hazardous phosphorus oxidesDecomposition Or potassium oxides

Byproducts:

Section 11. Toxicological Information

11.1 Information on The toxicological effects of this product have not been thoroughly studied.

Toxicological Effects:

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.

Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Dispose in accordance with local, state, and federal regulations.

Method:

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.

DOT Hazard Class: UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Not dangerous goods.

UN Number: Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
7631-99-4	Sodium Nitrate	No	No	Yes-Cat. N511
NA	NO Assay Nitrate Standard	No	No	No



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CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
7631-99-4	Sodium Nitrate	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory, 8A CAIR; CA PROP.65: No
NA	NO Assay Nitrate Standard	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No

European Community Hazard Symbol codes:

European Community Risk and Safety Phrases:

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

Regulatory Information

This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

Statement: European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 06/03/2014

Additional Information About No data available.

This Product:

Company Policy or

Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.



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according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 780016

Product Name: Nitrite Standard

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:

Company Name: Cayman Chemical Company

1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:

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

Skin Corrosion/Irritation, Category 2

Serious Eye Damage/Eye Irritation, Category 2A

Target Organ Systemic Toxicity (single exposure), Category 3

Aquatic Toxicity (Acute), Category 3

2.1.2 Classification according to Directive 1999/45/EC:

Xi: Irritant

Risk Phrases: R36/37/38

For full text of R- phrases: see SECTION 15.

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:



GHS Signal Word: Warning

GHS Hazard Phrases:

H315: Causes skin irritation.

H319: Causes serious eye irritation.

H335: May cause respiratory irritation.

H402: Harmful to aquatic life.

GHS Precaution Phrases:

P264: Wash {hands} thoroughly after handling.

P280: Wear {protective gloves/protective clothing/eye protection/face protection}.

P362+364: Take off contaminated clothing and wash it before reuse.

P261: Avoid breathing {dust/fume/gas/mist/vapours/spray}.

P273: Avoid release to the environment.

GHS Response Phrases:

P302+352: IF ON SKIN: Wash with plenty of soap and water.

P332+313: If skin irritation occurs, get medical advice/attention.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if

present and easy to do. Continue rinsing.



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P337+313: If eye irritation persists, get medical advice/attention.

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a {POISON CENTER/doctor/...} if you feel unwell.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:



Adverse Human Health Causes skin irritation. 2.3

Effects and Symptoms: Causes serious eye irritation

Harmful to aquatic life.

Material may be irritating to the mucous membranes and upper respiratory tract.

May be harmful by inhalation, ingestion, or skin absorption.

May cause respiratory irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

CAS#/ RTECS#	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	Risk Phrases/ GHS Classification
7632-00-0 RA1225000	Sodium nitrite	< 1.0 %	231-555-9 007-010-00-4	O;T;N;Xn; R8-25-50 Ox. Sol. 3: H272 Acute Tox.(O) 3: H301 Aquatic (A) 1: H400
NA NA	Nitrite Standard	>99.0 %	NA NA	Xi; R36/37/38 Skin Corr. 2: H315 Eye Damage 2A: H319 TOST (SE) 3: H335 H336

Section 4. First Aid Measures

4.1 Description of First AidNo data available.

Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

In Case of Skin

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove Contact:

contaminated clothing. Get medical attention if symptoms occur. Wash clothing before

reuse.

In Case of Eye

Contact:

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes

examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.



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Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Media: Use water spray to cool fire-exposed containers.

Unsuitable A solid water stream may be inefficient.

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

Flash Pt: No data.

Explosive Limits: LEL: No data. UEL: No data.

Autoignition Pt: No data.

5.3 Fire Fighting As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

Instructions: approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions. Avoid raising and breathing dust, and provide adequate ventilation.

Protective Equipment and Emergency

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

Procedures: rubber gloves).

6.2 Environmental

Take steps to avoid release into the environment, if safe to do so.

Precautions:

6.3 Methods and Material Conta

Contain spill and collect, as appropriate.

For Containment and

Transfer to a chemical waste container for disposal in accordance with local regulations.

Cleaning Up:

Section 7. Handling and Storage

7.1 Precautions To Be Avoid breathing dust/fume/gas/mist/vapours/spray.

Taken in Handling: Avoid prolonged or repeated exposure.

7.2 Precautions To Be

Keep container tightly closed.

Taken in Storing: Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
7632-00-0	Sodium nitrite	No data.	No data.	No data.
NA	Nitrite Standard	No data.	No data.	No data.
CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
CAS # 7632-00-0	Partial Chemical Name Sodium nitrite	OSHA TWA No data.	ACGIH TWA No data.	Other Limits No data.

SAFETY DATA SHEET Page: 4 **Nitrite Standard** Revision: 06/03/2014 Supersedes Revision: 07/10/2013 **Exposure Controls:** 8.2 Use process enclosures, local exhaust ventilation, or other engineering controls to 8.2.1 Engineering Controls control airborne levels below recommended exposure limits. (Ventilation etc.): 8.2.2 Personal protection equipment: **Eye Protection:** Safety glasses Compatible chemical-resistant gloves **Protective Gloves:** Lab coat **Other Protective** Clothing:

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

Facilities storing or utilizing this material should be equipped with an eyewash and a ance Practices:

safety shower.

Wash thoroughly after handling

	Wash thoroughly after handling.					
	Section 9. Physical and Chemical Properties					
9.1	Information on Basic Physical and Chemical Properties					
	Physical States:	[] Gas [] Liquid [X] Solid				
	Appearance and Odor:	A lyophilized powder				
	Melting Point:	No data.				
	Boiling Point:	No data.				
	Flash Pt:	No data.				
	Evaporation Rate:	No data.				
	Explosive Limits:	LEL: No data. UEL: No data.				
	Vapor Pressure (vs. Air or	No data.				
	mm Hg):					
	Vapor Density (vs. Air = 1):	No data.				
	Specific Gravity (Water = 1):	No data.				
	Solubility in Water:	No data.				
	Autoignition Pt:	No data.				
9.2	Other Information					
	Percent Volatile:	No data.				
	S	Section 10. Stability and Reactivity				
10.1	Reactivity: No da	ata available.				
400	Ctability: Unote	l l alde				

		Section 10. Stability and Reactivity
10.1	Reactivity:	No data available.
10.2	Stability:	Unstable [] Stable [X]
10.3	Stability Note(s):	Stable if stored in accordance with information listed on the product insert.
	Polymerization:	Will occur [] Will not occur [X]
10.4	Conditions To Avoid:	No data available.
10.5	Incompatibility - Materials To Avoid:	No data available.

10.6 Hazardous No data available.

Decomposition Or Byproducts:



11.1

SAFETY DATA SHEET **Nitrite Standard**

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Section 11. Toxicological Information

Toxicological Effects:

Information on

Carcinogenicity:

The toxicological effects of this product have not been thoroughly studied.

NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

Avoid release into the environment - harmful to aquatic organisms. 12.1 **Toxicity:**

Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 **Waste Disposal** Method:

Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.

DOT Hazard Class: UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Not dangerous goods.

UN Number: Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
7632-00-0	Sodium nitrite	No	Yes 100 LB	Yes
NA	Nitrite Standard	No	No	No

CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
7632-00-0	Sodium nitrite	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory, 5A(2), 12(b); CA PROP.65: No
NA	Nitrite Standard	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No



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European Community Hazard Symbol codes:



Xi

European Community Risk and Safety Phrases:

R36/37/38 Irritating to eyes, respiratory system and skin.

S24/25 Avoid contact with skin and eyes.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Regulatory Information T

This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

Statement: European Directive 67/548/EEC as amended.

Section 16. Other Information

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Additional Information About No data available.

This Product:

Company Policy or

Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.



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according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 780018

Product Name: Griess Reagent R1

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:

Company Name: Cayman Chemical Company

1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:

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

Skin Corrosion/Irritation, Category 1B

Serious Eye Damage/Eye Irritation, Category 2A

2.1.2 Classification according to Directive 1999/45/EC:

Xi: Irritant

Risk Phrases: R34, R36/37/38

For full text of R- phrases: see SECTION 15.

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:



GHS Signal Word: Danger

GHS Hazard Phrases:

H314: Causes severe skin burns and eye damage.

H319: Causes serious eye irritation.

GHS Precaution Phrases:

P260: Do not breathe {dust/fume/gas/mist/vapours/spray}.

P264: Wash {hands} thoroughly after handling.

P280: Wear {protective gloves/protective clothing/eye protection/face protection}.

GHS Response Phrases:

P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P363: Wash contaminated clothing before reuse.

P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P310: Immediately call a {POISON CENTER/doctor/...}.

P337+313: If eye irritation persists, get medical advice/attention.

GHS Storage and Disposal Phrases:



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Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:



Adverse Human Health Causes severe skin burns and eye damage. 2.3

Effects and Symptoms: Causes serious eye irritation.

Material may be irritating to the mucous membranes and upper respiratory tract.

May be harmful by inhalation, ingestion, or skin absorption. May cause eye, skin, or respiratory system irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

CAS#/ RTECS#	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration		Risk Phrases/ GHS Classification
NA	Griess Reagent R1	100.0 %	NA	Xi; R34-36/37/38
NA			NA	Skin Corr. 1B: H314
				Eye Damage 2A: H319

Section 4. First Aid Measures

4.1 Description of First AidNo data available.

Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

In Case of Skin

Contact:

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before

reuse.

In Case of Eye

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes

Contact:

examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.

Section 5. Fire Fighting Measures

Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. 5.1

Media: Use water spray to cool fire-exposed containers.

Unsuitable A solid water stream may be inefficient.

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

Flash Pt: No data.

Explosive Limits: LEL: No data. UEL: No data.

Autoignition Pt: No data.

5.3 Fire Fighting As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

Instructions: approved or equivalent), and full protective gear to prevent contact with skin and eyes.



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Section 6. Accidental Release Measures

6.1 **Protective Precautions**, Avoid breathing vapors and provide adequate ventilation.

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or **Protective Equipment**

and Emergency respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

rubber gloves).

Procedures:

6.2 **Environmental** Take steps to avoid release into the environment, if safe to do so.

Precautions:

Contain spill and collect, as appropriate. 6.3 **Methods and Material**

For Containment and

Transfer to a chemical waste container for disposal in accordance with local regulations.

Cleaning Up:

Section 7. Handling and Storage

Avoid breathing dust/fume/gas/mist/vapours/spray. 7.1 **Precautions To Be**

Taken in Handling: Avoid prolonged or repeated exposure.

Precautions To Be 7.2 Keep container tightly closed.

> Store in accordance with information listed on the product insert. Taken in Storing:

Section 8. Exposure Controls/Personal Protection

8.1 **Exposure Parameters:**

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
NA	Griess Reagent R1	No data.	No data.	No data.
CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
NA	Griess Reagent R1	No data.	No data.	No data.

8.2 **Exposure Controls:**

8.2.1 Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to

control airborne levels below recommended exposure limits. (Ventilation etc.):

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective Lab coat

Clothing:

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

ance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a

safety shower.

Wash thoroughly after handling.

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	S	ection 9. Physical and Chemical Properties
9.1	Information on Basic F	Physical and Chemical Properties
	Physical States:	[] Gas [X] Liquid [] Solid
	Appearance and Odor:	: Solution
	Melting Point:	No data.
	Boiling Point:	No data.
	Flash Pt:	No data.
	Evaporation Rate:	No data.
	Explosive Limits:	LEL: No data. UEL: No data.
	Vapor Pressure (vs. Ai mm Hg):	r or No data.
	Vapor Density (vs. Air	= 1): No data.
	Specific Gravity (Water	r = 1): No data.
	Solubility in Water:	No data.
	Autoignition Pt:	No data.
9.2	Other Information	
	Percent Volatile:	No data.
		Section 10. Stability and Reactivity
10.1	Reactivity:	No data available.
10.2	Stability:	Unstable [] Stable [X]
10.3	Stability Note(s):	Stable if stored in accordance with information listed on the product insert.
	Polymerization:	Will occur [] Will not occur [X]
10.4	Conditions To Avoid:	No data available.
10.5	Incompatibility - Materials To Avoid:	powdered metals strong bases strong oxidizing agents
10.6	Hazardous Decomposition Or Byproducts:	carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides sulfur oxides
		Section 11. Toxicological Information
11.1	Information on Toxicological Effects:	The toxicological effects of this product have not been thoroughly studied.
Carci	nogenicity:	NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.

Runoff from fire control or dilution water may cause pollution.



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Section 13. Disposal Considerations

13.1 Waste Disposal

Method:

Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Phosphoric acid, solution **DOT Hazard Class:** 8 CORROSIVE

UN/NA Number: 1805 Packing Group: III



14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Phosphoric acid, solution

UN Number: 1805 Packing Group: III

Hazard Class: 8 - CORROSIVE

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Phosphoric acid, solution

UN Number:1805Packing Group:IIIHazard Class:8 - CORROSIVEIATA Classification:8

Additional Transport Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
NA	Griess Reagent R1	No	No	No

CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
NA	Griess Reagent R1	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA PROP.65: No

European Community Hazard Symbol codes:



Χi

European Community Risk and Safety Phrases:

R34 Causes burns.

R36/37/38 Irritating to eyes, respiratory system and skin.

S24/25 Avoid contact with skin and eyes.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical

advice.

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Regulatory Information This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

Statement: European Directive 67/548/EEC as amended.



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Section 16. Other Information

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Additional Information About No data available.

This Product:

Company Policy or

Disclaimer:

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determine the suitability of the information for their particular purposes.



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according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 **Product Code:** 780020

> **Product Name:** Griess Reagent R2

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 **Details of the Supplier of the Safety Data Sheet:**

> **Company Name:** Cayman Chemical Company

> > 1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 **Emergency telephone number:**

> CHEMTREC Within USA and Canada: +1 (800)424-9300 **Emergency Contact:**

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:
- 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
- 2.1.2 Classification according to Directive 1999/45/EC:

Risk Phrases:

For full text of R- phrases: see SECTION 15.

- 2.2 **Label Elements:**
- 2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word:

GHS Hazard Phrases:

Based on evaluation of currently available data this substance or mixture is not classifiable according to GHS.

GHS Precaution Phrases:

No phrases apply.

GHS Response Phrases:

No phrases apply.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

2.3 Adverse Human Health Material may be irritating to the mucous membranes and upper respiratory tract.

Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.

May cause eye, skin, or respiratory system irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	Risk Phrases/ GHS Classification
NA NA	Griess Reagent R2	100.0 %	No phrases apply. No data available.



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Section 4. First Aid Measures

4.1 Description of First AidNo data available. Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

examined and tested by medical personnel.

In Case of Skin

Contact:

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before

reuse.

In Case of Eye

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes

Contact: In Case of Ingestion:

Wash out mouth with water provided person is conscious. Never give anything by mouth

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Media: Use water spray to cool fire-exposed containers.

Unsuitable A solid water stream may be inefficient.

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

No data. Flash Pt:

LEL: No data. UEL: No data. **Explosive Limits:**

Autoignition Pt: No data.

5.3 **Fire Fighting** As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

Instructions: approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

Protective Precautions, Avoid breathing vapors and provide adequate ventilation. 6.1

Protective Equipment and Emergency

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

rubber gloves). **Procedures:**

6.2 **Environmental**

Precautions:

Take steps to avoid release into the environment, if safe to do so.

6.3 **Methods and Material** Contain spill and collect, as appropriate.

For Containment and

Transfer to a chemical waste container for disposal in accordance with local regulations.

Cleaning Up:

Section 7. Handling and Storage

7.1 Avoid breathing dust/fume/gas/mist/vapours/spray. **Precautions To Be**

Taken in Handling: Avoid prolonged or repeated exposure.

7.2 **Precautions To Be** Keep container tightly closed.

> Store in accordance with information listed on the product insert. Taken in Storing:

> > Section 8. Exposure Controls/Personal Protection

8.1 **Exposure Parameters:**

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
NA	Griess Reagent R2	No data.	No data.	No data.



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CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
NA	Griess Reagent R2	No data.	No data.	No data.
8.2 Evnosura Controls:				

8.2 Exposure Controls:

8.2.1 Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to

(Ventilation etc.): control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective

Lab coat

Clothing:

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

ance Practices: Facilities storing or utilizing this material should be equipped with an eyewash and a

safety shower.

Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1	Information on	Basic Physical	and Chemical	Properties
-----	----------------	-----------------------	--------------	------------

Physical States: [] Gas [X] Liquid [] Solid

Appearance and Odor:

Melting Point:

Boiling Point:

Flash Pt:

No data.

No data.

Evaporation Rate:

No data.

Explosive Limits: LEL: No data. UEL: No data.

Vapor Pressure (vs. Air or

mm Hg):

No data.

No data.

Vapor Density (vs. Air = 1): No data.

Specific Gravity (Water = 1): No data.

Solubility in Water: No data.

Autoignition Pt: No data.

9.2 Other Information

Percent Volatile: No data.

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [] Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Polymerization: Will occur [] Will not occur [X]

10.4 Conditions To Avoid: No data available.10.5 Incompatibility - No data available.

Materials To Avoid:

10.6 Hazardous No data available.

Decomposition Or

Byproducts:



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Section 11. Toxicological Information

11.1 Information on

Toxicological Effects:

The toxicological effects of this product have not been thoroughly studied.

Carcinogenicity:

NTP? No

IARC Monographs? No

OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment.

Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal

Dispose in accordance with local, state, and federal regulations.

Method:

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.

DOT Hazard Class: UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Not dangerous goods.

UN Number: Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport

Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)	S. 302 (EHS)	S. 304 RQ	S. 313 (TRI)
NA	Griess Reagent R2	No	No	No

CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
NA	Griess Reagent R2	CAA HAP,ODC: No; CWA NPDES: No; TSCA: No; CA
		PROP.65: No

European Community Hazard Symbol codes:

European Community Risk and Safety Phrases:

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

Regulatory Information This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

Statement: European Directive 67/548/EEC as amended.

Section 16. Other Information

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Additional Information About No data available.

This Product:

Company Policy or DISCLAIMER: This information is believed to be accurate and represents the best



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Multi-region format

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	Supersedes Revision: 01/21/2013
Disclaimer:	information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to
	determine the suitability of the information for their particular purposes.



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according to Regulation (EC) No. 1907/2006 as amended by (EC) No. 1272/2008

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 780022

Product Name: Nitrate/Nitrite Assay Buffer

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:

Company Name: Cayman Chemical Company

1180 E. Ellsworth Rd. Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300

CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

- 2.1 Classification of the Substance or Mixture:
- 2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
- 2.1.2 Classification according to Directive 1999/45/EC:

Risk Phrases:

For full text of R- phrases: see SECTION 15.

- 2.2 Label Elements:
- 2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word:

GHS Hazard Phrases:

Based on evaluation of currently available data this substance or mixture is not classifiable according to GHS.

GHS Precaution Phrases:

No phrases apply.

GHS Response Phrases:

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

GHS Storage and Disposal Phrases:

Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

2.3 Adverse Human Health Material may be irritating to the mucous membranes and upper respiratory tract.

Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.

May cause eye, skin, or respiratory system irritation.

To the best of our knowledge, the toxicological properties have not been thoroughly

investigated.

Section 3. Composition/Information on Ingredients

CAS#/ RTECS#	Hazardous Components (Chemical Name)/ REACH Registration No.	Concentration	EC No./ EC Index No.	Risk Phrases/ GHS Classification
7778-77-0 TC6615500	Potassium phosphate, Monobasic	13.61 %	231-913-4 NA	No phrases apply. No data available.
7732-18-5 ZC0110000	Water	86.39 %	231-791-2 NA	No phrases apply. No data available.



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Section 4. First Aid Measures

Description of First AidNo data available. 4.1

Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained

personnel. Get immediate medical attention.

In Case of Skin

Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before Contact:

reuse.

In Case of Eye

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

Contact:

In Case of Ingestion:

Wash out mouth with water provided person is conscious. Never give anything by mouth

to an unconscious person. Get medical attention. Do NOT induce vomiting unless

directed to do so by medical personnel.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Media: Use water spray to cool fire-exposed containers.

Unsuitable A solid water stream may be inefficient.

Extinguishing Media:

5.2 Flammable Properties No data available.

and Hazards:

No data. Flash Pt:

LEL: No data. UEL: No data. **Explosive Limits:**

Autoignition Pt: No data.

5.3 **Fire Fighting** As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH

approved or equivalent), and full protective gear to prevent contact with skin and eyes. Instructions:

Section 6. Accidental Release Measures

Protective Precautions, Avoid breathing vapors and provide adequate ventilation. 6.1

Protective Equipment and Emergency

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy

rubber gloves). **Procedures:**

6.2 **Environmental**

Precautions:

Take steps to avoid release into the environment, if safe to do so.

6.3 **Methods and Material** Contain spill and collect, as appropriate.

For Containment and

Transfer to a chemical waste container for disposal in accordance with local regulations.

Cleaning Up:

Section 7. Handling and Storage

7.1 Avoid breathing dust/fume/gas/mist/vapours/spray. **Precautions To Be**

Taken in Handling: Avoid prolonged or repeated exposure.

7.2 **Precautions To Be** Keep container tightly closed.

> Store in accordance with information listed on the product insert. Taken in Storing:

Section 8. Exposure Controls/Personal Protection

8.1 **Exposure Parameters:**

CAS#	Partial Chemical Name	Britain EH40	France VL	Europe
7778-77-0	Potassium phosphate, Monobasic	No data.	No data.	No data.
7732-18-5	Water	No data.	No data.	No data.



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CAS#	Partial Chemical Name	OSHA TWA	ACGIH TWA	Other Limits
7778-77-0	Potassium phosphate, Monobasic	No data.	No data.	No data.
7732-18-5	Water	No data.	No data.	No data.

8.2 **Exposure Controls:**

8.2.1 Engineering Controls Use process enclosures, local exhaust ventilation, or other engineering controls to

control airborne levels below recommended exposure limits. (Ventilation etc.):

8.2.2 Personal protection equipment:

Safety glasses **Eye Protection:**

Protective Gloves: Compatible chemical-resistant gloves

Other Protective

Clothing:

Lab coat

Respiratory Equipment NIOSH approved respirator, as conditions warrant.

(Specify Type):

Work/Hygienic/Mainten Do not take internally.

Facilities storing or utilizing this material should be equipped with an eyewash and a ance Practices:

safety shower.

Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1	Information	on B	asic Phy	ysical	and	Chemical	Propertion	es
-----	-------------	------	----------	--------	-----	----------	------------	----

Physical States: [] Gas [X] Liquid [] Solid

Solution **Appearance and Odor:** 7.4 pH: No data. **Melting Point:** No data. **Boiling Point:** Flash Pt: No data. No data. **Evaporation Rate:**

LEL: No data. UEL: No data. **Explosive Limits:**

Vapor Pressure (vs. Air or

mm Hg):

No data.

No data. Vapor Density (vs. Air = 1): Specific Gravity (Water = 1): No data. No data. Solubility in Water: **Autoignition Pt:** No data.

9.2 Other Information

> No data. Percent Volatile:

Section 10. Stability and Reactivity

No data available. 10.1 Reactivity:

Unstable [] 10.2 Stability: Stable [X]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

Will not occur [X] Polymerization: Will occur []

10.4 Conditions To Avoid: No data available. 10.5 Incompatibility strong oxidizing agents

Materials To Avoid:

10.6 **Hazardous** phosphorus oxides **Decomposition Or**

Byproducts:

potassium oxides



11.1

SAFETY DATA SHEET Nitrate/Nitrite Assay Buffer

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Section 11. Toxicological Information

Information on **Toxicological Effects:**

The toxicological effects of this product have not been thoroughly studied.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

Avoid release into the environment. 12.1 **Toxicity:**

Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

Dispose in accordance with local, state, and federal regulations. 13.1 **Waste Disposal**

Method:

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

DOT Proper Shipping Name: Not dangerous goods.

DOT Hazard Class: UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Not dangerous goods.

UN Number: Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Not dangerous goods.

Additional Transport Transport in accordance with local, state, and federal regulations.

Information:

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

CAS#	Hazardous Components (Chemical Name)		S. 304 RQ	S. 313 (TRI)
7778-77-0	Potassium phosphate, Monobasic	No	No	No
7732-18-5	Water	No	No	No

CAS#	Hazardous Components (Chemical Name)	Other US EPA or State Lists
7778-77-0	Potassium phosphate, Monobasic	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No
7732-18-5	Water	CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No



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European Community Hazard Symbol codes:

European Community Risk and Safety Phrases:

S24/25 Avoid contact with skin and eyes.

S37/39 Wear suitable gloves and eye/face protection.

Regulatory Information This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and

Statement: European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 06/03/2014

Additional Information About No data available.

This Product:

Company Policy or

Disclaimer:

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