Material Safety Data Sheet

NORGEN BIOTEK CORPORATION

Column Activation and Wash Buffer (Part Number 17302, 17402) pH Binding Buffer (Part Number 17403)

1 . Product and company identification

Common name : **Column Activation and Wash Buffer (Part Number 17302, 17402) pH Binding Buffer (Part Number 17403)**

Material uses : Not available.

Supplier/Manufacturer : Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061

In case of emergency : CANUTEC (613) 996-6666

MSDS authored by: : Kemika XXI Inc. + 1-450-435-7475 11/07/2005

2 . Hazards identification

Physical state : Liquid.

Color : Clear. (Light.)

Hazard status : This material is classified hazardous under the WHMIS Controlled Product Regulation in Canada.

Routes of entry : Dermal contact. Eye contact.

Potential acute health effects

Eyes : Irritating to eyes.

Skin : Irritating to skin.

Inhalation : Irritating to respiratory system.

Ingestion : May be harmful if swallowed.

Potential chronic health effects : Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.

Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation.

See toxicological information (section 11)

3 . Composition/information on ingredients

Canada

Name	CAS number	%
Citric Acid	77-92-9	10 - 13
Phosphoric acid	7664-38-2	5 - 7
Sodium hydroxide	1310-73-2	5 - 7

4 . First aid measures

Eye contact : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.

Skin contact : Wash with soap and water. Get medical attention if symptoms occur.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Notes to physician : No specific antidote. Medical staff must contact Poison Control Center.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

5 . Fire-fighting measures

Flammability of the product : Non-flammable.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7 . Handling and storage

Handling : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

8 . Exposure controls/personal protection

Canada

Product name	Exposure limits
Phosphoric acid	**ACGIH TLV (Canada, 2003).** STEL: 3 mg/m^3 15 minute/minutes. Form: All forms. TWA: 1 mg/m^3 8 hour/hours. Form: All forms.
Sodium hydroxide	**ACGIH TLV (Canada, 9/2004).** CEIL: 2 mg/m^3 Form: All forms. **CSST (Canada, 2001).** TWA: 2 mg/m^3 8 hour/hours.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : 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.
Recommended: Splash goggles.

Skin : 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.
Body: Recommended: Lab coat.

Respiratory : A respirator is not needed under normal and intended conditions of product use.

Hands : Recommended:Disposable vinyl gloves.

Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

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.

9 . Physical and chemical properties

Physical state : Liquid.

Color : Clear. (Light.)

pH : 6.5 [Acidic.]

Boiling/condensation point : Weighted average: 102.77°C (217°F)

Melting/freezing point : Weighted average: 0.11°C (32.2°F)

Relative density : Weighted average: 1.09 (Water = 1)

Vapor pressure : The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (Water).

Vapor density : The highest known value is 0.62 (Air = 1) (Water).

Ionicity (in water) : Amphoteric. (Water).

Solubility : Miscible in water.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive with oxidizing materials, organic materials and alkalis.

Hazardous polymerization : Will not occur.

Conditions of reactivity : None known.

11 . Toxicological information

Toxicity data

Product/ingredient name	Test	Result	Route	Species
Citric Acid	LD50	5040 mg/kg	Oral	Mouse
Phosphoric acid	LD50	1530 mg/kg	Oral	Rat
	LD50	2740 mg/kg	Dermal	Rabbit

Other toxic effects on humans : Irritating to eyes, respiratory system and skin.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : Irritating to mouth, throat and stomach.

Inhalation : Irritating to respiratory system.

Eyes : Irritating to eyes.

Skin : Irritating to skin.

12 . Ecological information

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides and water, phosphates. Some metallic oxides.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

14 . Transport information

Regulatory information

UN/ IMDG/ IATA TDG : Not regulated.

15 . Regulatory information

Canada

WHMIS (Canada) : Class D-2B: Material causing other toxic effects (Toxic) .IRRITANT.

DSL : All components listed.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

International lists : All components listed are listed on major international inventories or exempted from being listed in Australia (AICS), Europe (EINECS/ELINCS), Korea (TCCL), Japan (METI/MOL), Philippines (RA6969).

16 . Other information

Hazardous Material Information System (U.S.A.) :

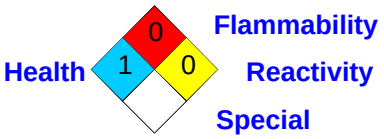
HMIS RATING

Health	1
Fire hazard	0
Physical Hazard	0
Personal protection	C

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

Date of issue : 11/07/2005

Version : 1

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Material Safety Data Sheet

NORGEN BIOTEK CORPORATION

Stabilizer (Part Number 17404)

1 . Product and company identification

Common name : **Stabilizer (Part Number 17404)**

Material uses : Not available.

Supplier/Manufacturer : Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061

In case of emergency : CANUTEC (613) 996-6666

MSDS authored by: : Kemika XXI Inc. + 1-450-435-7475 11/07/2005

2 . Hazards identification

Physical state : Liquid.

Color : Light.

Hazard status : This material is classified as not hazardous under the WHMIS in Canada.

Emergency overview : No specific hazard.
USE WITH CARE.
Follow good industrial hygiene practice.

Routes of entry : Dermal contact. Eye contact. Ingestion.

Potential acute health effects

Eyes : No known significant effects or critical hazards.

Skin : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Ingestion : No known significant effects or critical hazards.

Potential chronic health effects : Not applicable.

See toxicological information (section 11)

3 . Composition/information on ingredients

Canada

Name	CAS number	%
No hazardous ingredient		

4 . First aid measures

Eye contact : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.

Skin contact : Wash with soap and water. Get medical attention if symptoms occur.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Notes to physician : No specific antidote. Medical staff must contact Poison Control Center.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

5 . Fire-fighting measures

Flammability of the product : Non-flammable.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. In case of a leak, clear the affected area, protect people, eliminate sources of ignition and respond with trained personnel. Adequate fire protection must be provided.

If leaking incidentally from the cylinder or its valve, contact your supplier. Use non-sparking tools and equipment during the response.

Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7 . Handling and storage

Handling : Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control airborne levels. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal protection

Eyes : 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.
Recommended: Safety glasses.

Skin : 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.
Body: Recommended: Lab coat.

Respiratory : A respirator is not needed under normal and intended conditions of product use.

Hands : Recommended: Disposable vinyl gloves.

Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

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.

9 . Physical and chemical properties

Physical state : Liquid.

Color : Light.

pH : Neutral.

Boiling/condensation point : The lowest known value is 100°C (212°F) (Water).

Melting/freezing point : May start to solidify at 0°C (32°F) based on data for: Water.

Relative density : The only known value is 1 (Water = 1) (Water).

Vapor pressure : The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (Water).

Vapor density : The highest known value is 0.62 (Air = 1) (Water).

Ionicity (in water) : Amphoteric. (Water).

Solubility : Miscible in water.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Hazardous polymerization : Will not occur.

11 . Toxicological information

Chronic effects on humans : Carcinogenic effects: Classified A4 (Not classifiable for humans or animals.) by ACGIH [Sodium azide].

Other toxic effects on humans : Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion. Non-sensitizer to skin.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Skin : No known significant effects or critical hazards.

12 . Ecological information

Environmental precautions : Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Products of degradation : Not available.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

14 . Transport information

Regulatory information

UN/ IMDG/ IATA TDG : Not regulated.

15 . Regulatory information

Canada

WHMIS (Canada) : Not regulated.

DSL : All components listed.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

International lists : All components listed are listed on major international inventories or exempted from being listed in Australia (AICS), Europe (EINECS/ELINCS), Korea (TCCL), Japan (METI/MOL), Philippines (RA6969).

16 . Other information

Hazardous Material Information System (U.S.A.) :

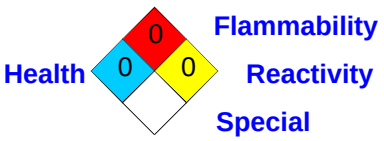
HMIS RATING

Health	0
Fire hazard	0
Physical Hazard	0
Personal protection	C

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

Date of issue : 11/07/2005

Version : 1

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Material Safety Data Sheet

Elution Buffer (Product Number 17405)

1 . Product and company identification

Common name : **Elution Buffer (Product Number 17405)**
Material uses : Not available.

Supplier/Manufacturer : Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061

In case of emergency : CANUTEC (613) 996-6666
MSDS authored by: : Kemika XXI Inc. + 1-450-435-7475 11/07/2005

2 . Hazards identification

Physical state : Liquid.
Color : Light.
Hazard status : This material is classified as not hazardous under the WHMIS in Canada.
Emergency overview : No specific hazard.
USE WITH CARE.
Follow good industrial hygiene practice.
Routes of entry : Dermal contact. Eye contact. Ingestion.
Potential acute health effects
Eyes : No known significant effects or critical hazards.
Skin : No known significant effects or critical hazards.
Inhalation : No known significant effects or critical hazards.
Ingestion : No known significant effects or critical hazards.
Potential chronic health effects : Not applicable.
See toxicological information (section 11)

3 . Composition/information on ingredients

Canada

Name	CAS number	%
No hazardous ingredient		

4 . First aid measures

Eye contact : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.
Skin contact : Wash with soap and water. Get medical attention if symptoms occur.
Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.
Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.
Notes to physician : No specific antidote. Medical staff must contact Poison Control Center.
Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

5 . Fire-fighting measures

Flammability of the product : Non-flammable.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7 . Handling and storage

Handling : Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

8 . Exposure controls/personal protection

Consult local authorities for acceptable exposure limits.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control airborne levels. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal protection

Eyes : 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.
Recommended: Safety glasses.

Skin : 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.
Body: Recommended: Lab coat.

Respiratory : A respirator is not needed under normal and intended conditions of product use.

Hands : Recommended: Disposable vinyl gloves.

Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

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.

9 . Physical and chemical properties

Physical state : Liquid.

Color : Light.

pH : Neutral.

Boiling/condensation point : The lowest known value is 100°C (212°F) (Water).

Melting/freezing point : May start to solidify at 0°C (32°F) based on data for: Water.

Relative density : The only known value is 1 (Water = 1) (Water).

Vapor pressure : The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (Water).

Vapor density : The highest known value is 0.62 (Air = 1) (Water).

Ionicity (in water) : Amphoteric. (Water).

Solubility : Miscible in water.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Hazardous polymerization : Will not occur.

11 . Toxicological information

Other toxic effects on humans : Slightly hazardous in case of skin contact (irritant), of eye contact (irritant). Non-sensitizer to skin.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : No known significant effects or critical hazards.

Inhalation : No known significant effects or critical hazards.

Eyes : No known significant effects or critical hazards.

Skin : No known significant effects or critical hazards.

12 . Ecological information

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : Not available.

Toxicity of the products of biodegradation : The product itself and its products of degradation are not toxic.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

14 . Transport information

Regulatory information

UN/ IMDG/ IATA TDG : Not regulated.

15 . Regulatory information

Canada

WHMIS (Canada) : Not regulated.

DSL : All components listed.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

International lists : All components listed are listed on major international inventories or exempted from being listed in Australia (AICS), Europe (EINECS/ELINCS), Korea (TCCL), Japan (METI/MOL), Philippines (RA6969).

16 . Other information

Hazardous Material Information System (U.S.A.) :

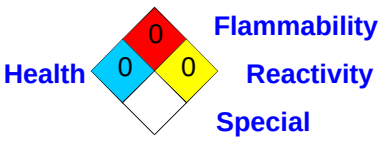
HMIS RATING

Health	0
Fire hazard	0
Physical Hazard	0
Personal protection	C

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

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Material Safety Data Sheet

NORGEN BIOTEK CORPORATION

Neutralizer (Product Number 17406)

1 . Product and company identification

Common name : **Neutralizer (Product Number 17406)**

Material uses : Not available.

Supplier/Manufacturer : Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061

In case of emergency : CANUTEC (613) 996-6666

MSDS authored by: : Kemika XXI Inc. + 1-450-435-7475 11/07/2005

2 . Hazards identification

Physical state : Liquid.

Color : Light.

Hazard status : This material is classified as not hazardous under the WHMIS in Canada.

Emergency overview : No specific hazard.
USE WITH CARE.
Follow good industrial hygiene practice.

Routes of entry : Dermal contact. Eye contact. Ingestion.

Potential acute health effects

Eyes : Irritating to eyes.

Skin : Irritating to skin.

Inhalation : Irritating to respiratory system.

Ingestion : May be harmful if swallowed.

Potential chronic health effects : Not applicable.

Medical conditions aggravated by over-exposure : Repeated skin exposure can produce local skin destruction or dermatitis. Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation.

See toxicological information (section 11)

3 . Composition/information on ingredients

Canada

Name	CAS number	%
Phosphoric acid	7664-38-2	5 - 7
Citric Acid	77-92-9	5 - 7

4 . First aid measures

Eye contact : Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.

Skin contact : Wash with soap and water. Get medical attention if symptoms occur.

Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.

Ingestion : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Notes to physician : No specific antidote. Medical staff must contact Poison Control Center.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

5 . Fire-fighting measures

Flammability of the product : Non-flammable.

Extinguishing media

Suitable : Use an extinguishing agent suitable for the surrounding fire.

Not suitable : None known.

Special exposure hazards : No specific hazard.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials), scoop up material and place in a sealable, liquid-proof container for disposal. For large spills, dike spilled material or otherwise contain material to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

7 . Handling and storage

Handling : Do not ingest. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Wash thoroughly after handling.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

8 . Exposure controls/personal protection

Canada

Product name	Exposure limits
Phosphoric acid	**ACGIH TLV (Canada, 2003).** STEL: 3 mg/m^3 15 minute/minutes. Form: All forms. TWA: 1 mg/m^3 8 hour/hours. Form: All forms.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

Eyes : 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.
Recommended: Splash goggles.

Skin : 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.
Body: Recommended: Lab coat.

Respiratory : A respirator is not needed under normal and intended conditions of product use.

Hands : Recommended: Disposable vinyl gloves.

Personal protection in case of a large spill : Safety glasses, goggles or face shield. Impervious gloves. Full suit. Boots. Wear NIOSH-approved self-contained breathing apparatus or equivalent and full protective gear.

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.

9 . Physical and chemical properties

Physical state : Liquid.

Color : Light.

pH : Acidic.

Boiling/condensation point : Weighted average: 102.58°C (216.6°F)

Melting/freezing point : Weighted average: 0.1°C (32.2°F)

Relative density : Weighted average: 1.04 (Water = 1)

Vapor pressure : The highest known value is 2.3 kPa (17.5 mm Hg) (at 20°C) (Water).

Vapor density : The highest known value is 0.62 (Air = 1) (Water).

Ionicity (in water) : Amphoteric. (Water).

Solubility : Miscible in water.

10 . Stability and reactivity

Stability and reactivity : The product is stable.

Incompatibility with various substances : Reactive with oxidizing materials, organic materials and alkalis.

Hazardous polymerization : Will not occur.

Conditions of reactivity : Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge.
Non-flammable in the presence of the following materials or conditions: heat.

11 . Toxicological information

Toxicity data

Product/ingredient name	Test	Result	Route	Species
Phosphoric acid	LD50	1530 mg/kg	Oral	Rat
	LD50	2740 mg/kg	Dermal	Rabbit
Citric Acid	LD50	5040 mg/kg	Oral	Mouse

Other toxic effects on humans : Irritating to eyes, respiratory system and skin.
Non-sensitizer to skin.

Specific effects

Carcinogenic effects : No known significant effects or critical hazards.

Mutagenic effects : No known significant effects or critical hazards.

Teratogenicity / Reproductive toxicity : No known significant effects or critical hazards.

Sensitization

Ingestion : Irritating to mouth, throat and stomach.

Inhalation : Irritating to respiratory system.

Eyes : Irritating to eyes.

Skin : Irritating to skin.

12 . Ecological information

Environmental precautions : No known significant effects or critical hazards.

Products of degradation : These products are carbon oxides and water, phosphates.

Toxicity of the products of biodegradation : The products of degradation are less toxic than the product itself.

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. 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.

14 . Transport information

Regulatory information

UN/ IMDG/ IATA TDG : Not regulated.

15 . Regulatory information

Canada

WHMIS (Canada) : Not regulated.
DSL : All components listed.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

International lists : All components listed are listed on major international inventories or exempted from being listed in Australia (AICS), Europe (EINECS/ELINCS), Korea (TCCL), Japan (METI/MOL), Philippines (RA6969).

16 . Other information

Hazardous Material Information System (U.S.A.) :

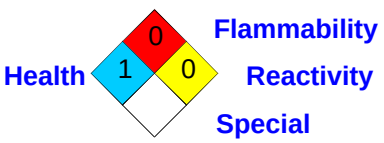
HMIS RATING

Health	1
Fire hazard	0
Physical Hazard	0
Personal protection	C

HAZARD RATINGS

4- Extreme
3- Serious
2- Moderate
1- Slight
0- Minimal

National Fire Protection Association (U.S.A.) :



References : ANSI Z400.1, MSDS Standard, 2004. - Manufacturer's Material Safety Data Sheet. - Canada Gazette Part II, Vol. 122, No. 2. Registration SOR/88-64, 31 December 1987. Hazardous Products Act "Ingredient Disclosure List" - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005.

Date of issue : 11/07/2005
Version : 1

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Spin Columns

1. Identification of the substance/preparation and of the company/undertaking

Product name : **Spin Columns (Silicon Carbide)**

Chemical product name : Not applicable.

Synonyms : Not available.

Chemical Formula : Not applicable.

Material Uses : Spin columns (filled with silicon carbide).

Catalog#

Manufacturer :
Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061

Supplier :
Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061

Emergency telephone number : Canada: CANUTEC-1-613-996-6666
US: CHEMTREC-1-800-424-9300

2. Composition / information on ingredients

Substance/Preparation : Preparation.

Chemical name	CAS No.	%	EC Number	Classification
United States				
1) Silicon Carbide	409-21-2	70-100	206-991-8	Not applicable.
Germany				
1) Silicon Carbide	409-21-2	70-100	206-991-8	Not applicable.
See Section 16 for the full text of the R Phrases declared above				
United Kingdom (UK)				
1) Silicon Carbide	409-21-2	70-100	206-991-8	Not applicable.
Japan				
1) Silicon Carbide	409-21-2	70-100	Listed on METI.	Not applicable.
Canada				
1) Silicon Carbide	409-21-2	70-100	206-991-8	Not applicable.

This material is classified as non-hazardous under the United States OSHA regulation, the European DSD/DPD Directives and several countries specific requirements, in Japan and under the Canadian WHMIS regulation.

See Section 8 for Exposure Limits.
See Section 11 for Toxicological Data.
See Section 14 for UN Number.

3. Hazards identification

Physical State and Appearance : Solid. (Powdered solid.)

Emergency Overview : No specific hazard.
USE WITH CARE
Do not breathe dust.

Routes of Entry : Inhalation.

The substance is not classified as dangerous according to Directive 2001/59/EC.

Classification in Europe :

Effects and symptoms

Inhalation : Slightly hazardous in case of inhalation (lung irritant). Can cause silicosis.

Skin Contact : Slightly hazardous in case of skin contact (irritant). Non-sensitizer for skin.

Eye Contact : Non-irritating to the eyes.

Aggravating conditions : Repeated or prolonged exposure may aggravate medical condition. Do not break container and avoid breathing dust.

4. First-aid measures

First-Aid measures

Inhalation : If inhaled, remove to fresh air. Get medical attention if symptoms appear.

Ingestion : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately.

Skin Contact : Wash with soap and water. Get medical attention if irritation develops. Cold water may be used.

Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Get medical attention if irritation occurs.

Notes to physician : Not available.

Protection of first-aiders : Not available.

5. Fire-fighting measures

Extinguishing Media

Suitable : Use extinguishing media suitable for surrounding materials.

Unsuitable. : Not available.

Unusual fire/explosion hazards : Not available.

Hazardous thermal (de)composition products : Not applicable.

Special fire-fighting procedures : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Protection of fire-fighters : Not applicable.

6. Accidental release measures

Personal precautions : Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.

Environmental Precautions and Clean-up Methods : Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

7. Handling and storage

Handling : Do not breathe dust. Keep away from incompatibles such as oxidizing agents, acids.

Storage : Keep container tightly closed. Keep container in a cool, well-ventilated area.

Germany - Storage Code : Not available.

8. Exposure controls/personal protection

Engineering measures : Good general ventilation should be sufficient to control airborne levels.

Hygiene measures : Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Ingredient Name	Occupational Exposure Limits
United States	
1) Silicon Carbide	**ACGIH TLV (United States, 2001). Notes: 1996 Adoption The value is for total dust containing no asbestos and < 1%crystalline silica. Refers to Appendix A -- Carcinogens.** TWA: 10 mg/m^3 **NIOSH REL (United States, 2001).** TWA: 5 mg/m^3 Period: 10 hour(s). Form: Respirable fraction **OSHA PEL (United States, 1971).** TWA: 5 MGM3 Form: Respirable fraction TWA: 15 MGM3 Form: Total dust **OSHA PEL 1989 (United States, 1989).** TWA: 5 mg/m^3 Form: Respirable fraction TWA: 10 mg/m^3 Form: Total dust
Germany	
1) Silicon Carbide	Not available.
United Kingdom (UK)	
1) Silicon Carbide	Not available.
Japan	
1) Silicon Carbide	Not available.
Canada	
1) Silicon Carbide	Not available.

Recommended monitoring procedures : Not available.

Personal protective equipment

Respiratory system : Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Skin and body : Lab coat.

Hands : Gloves.

Eyes : Safety glasses.

9. Physical and chemical properties

Physical state : Solid. (Powdered solid.)

Color : Grey.

Odor : Odorless.

pH : Not applicable.

Flash point : Not applicable.

Explosive properties : Risks of explosion of the product in presence of mechanical impact: Not applicable.
Risks of explosion of the product in presence of static discharge: Not applicable.

Density : The only known value is 3.23 (Water = 1) (Silicon Carbide).

Solubility : Insoluble in cold water, hot water.

10. Stability and reactivity

Stability : The product is stable at room temperature.

Conditions to avoid : Not available.

Materials to avoid : Reactive with oxidizing agents, acids.

Hazardous Decomposition Products : Not applicable.

11. Toxicological information

Acute toxicity

Ingredient Name	Test	Result	Route	Species
Silicon Carbide	Not available.	Not available.	Not available.	Not available.

Skin irritation : Non-irritant for skin.

Eye irritation : Hazardous in case of eye contact (irritant).

Sensitization : Non-sensitizer for skin.

Chronic toxicity : Repeated or prolonged exposure may aggravate medical condition. Do not break container and avoid breathing dust.

Carcinogenic Effects : Not available.

Mutagenic Effects : Not available.

Reproduction toxicity : Not available.

Developmental and Teratogenic Effects : Not available.

12. Ecological information

Ecotoxicity Data

Ingredient Name	Species	Period	Result
Silicon Carbide	Not available.	Not available.	Not available.

Mobility : Not available.

Persistence/degradability : Not available.

Bioaccumulative potential : Not available.

Soil/Water Partition Coefficient (K_{oc}) : Not available.

13. Disposal considerations

Methods of disposal : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Waste Classification : Not applicable.

European Waste Catalogue (EWC) : Not available.

Hazardous Waste : To present knowledge of the supplier, this product is not regarded as hazardous waste as defined by EU Directive 94/904/EC.

14. Transport information

International transport regulations

Regulatory Information	Classification
DOT (United States)	Not regulated.
ADR/RID (Europe)	Not regulated.
ADN (Europe)	Not regulated.
Road Law (Japan)	Not regulated.
TDG (Canada)	Not regulated.
IATA-DGR	Not regulated.
IMDG	Not regulated.

15. Regulatory information

HCS (United States) : Not controlled under the HCS (United States).

U.S. Federal Regulations : TSCA 8(b) inventory: Components listed.

SARA 302/304/311/312 extremely hazardous substances: No ingredient was found.
SARA 302/304 emergency planning and notification: No ingredient was found.
SARA 302/304/311/312 hazardous chemicals: Silicon Carbide
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Silicon Carbide: Immediate (Acute) Health Hazard

SARA 313 toxic chemical notification and release reporting: No ingredient was found.

Clean Water Act (CWA) 307: No ingredient was found.

Clean Water Act (CWA) 311: No ingredient was found.

Clean Air Act (CAA) 112 accidental release prevention: No ingredient was found.

Clean Air Act (CAA) 112 regulated flammable substances: No ingredient was found.

Clean Air Act (CAA) 112 regulated toxic substances: No ingredient was found.

State Regulations : Pennsylvania RTK: Silicon Carbide: (generic environmental hazard)
Massachusetts RTK: Silicon Carbide
New Jersey: Silicon Carbide

California Prop. 65: No ingredient was found.

EU Regulations

Risk Phrases : This product is not classified according to the EU regulations.

Safety Phrases : Not applicable.

Contains : No hazardous ingredients at or above concentration to be considered.

Product Use : Classification and labeling have been performed according to EU directives 67/548/EEC, 88/379/EEC including amendments and the intended use.
- Consumer applications.

National regulations

Germany

Ordinance on Combustible Liquids : Class: Omitted

Hazard class for water (GWK) : 1

United Kingdom (UK)

VOC Content (Retail Use) : Not applicable.

VOC Content (Industrial Use) : Contains 0 wt% VOC.

Japan Control Laws : Contains no substances that is considered hazardous at the present concentration level.

WHMIS (Canada) : Not controlled under WHMIS (Canada).

DSL/NDSL: Components listed.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other information

US Label Requirements : USE WITH CARE

Hazardous Material Information System (U.S.A.)

Health	1
Fire Hazard	0
Reactivity	0
Personal Protection	E

National Fire Protection Association (U.S.A.)

Europe Label :

Japan Label : Contains no substances that is considered hazardous at the present concentration level.

WHMIS Label :

HISTORY

Date of printing : **3/26/2003.**

Date of issue : **3/26/2003.**

Date of Previous Issue : **No Previous Validation.**

Version : **1**

Prepared by : **Kemika XXI inc.**

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