

# SAFETY DATA SHEET

United States

## Section 1. Identification

Product name

**Lysis buffer type 4; part of 'Tissue & cells genomicPrep Mini Spin Kit, 250 purifications'**

Catalogue Number

**28-9042-76**



9 0 2 8 9 0 4 2 7 6

Chemical name

Proteinase K

Other means of identification

Not available.

Product type

Liquid.

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

#### Identified uses

Analytical chemistry.  
Laboratory chemicals  
Scientific research and development

Supplier

Cytiva  
Amersham Place  
Little Chalfont  
Buckinghamshire  
HP7 9NA United Kingdom  
+44 1494 508000

Cytiva USA  
100 Results Way  
Marlborough, MA 01752  
1-800-526-3593

In case of emergency

INFOTRAC - 24 Hour number: 1-800-535-5053  
Outside of the United States, call 24 Hour number: 001-352-323-3500 (Call Collect)

## Section 2. Hazards identification

OSHA/HCS status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

ACUTE TOXICITY (oral) - Category 4  
SKIN IRRITATION - Category 2  
EYE IRRITATION - Category 2A  
RESPIRATORY SENSITIZATION - Category 1  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 100%

Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 100%

### GHS label elements

Hazard pictograms



Signal word

Danger

Hazard statements

Harmful if swallowed.  
Causes skin irritation.  
Causes serious eye irritation.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause respiratory irritation.

### Precautionary statements



Prevention	Wear protective gloves. Wear eye or face protection. Wear respiratory protection. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash thoroughly after handling.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell. If experiencing respiratory symptoms: Call a POISON CENTER or doctor. IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell. Rinse mouth. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
Disposal	Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified	None known.
Hazards identified when used	No known significant effects or critical hazards.

Section 3. Composition/information on ingredients

Substance/mixture	Mixture
Chemical name	Proteinase K
Other means of identification	Not available.

Ingredient name	Synonyms	%	Identifiers
proteases	Proteinase K; Protease E.C.3.4.21.62 (bacillus licheniformis, into which protease producing gene of bacilluslentus was introduced); Tritirachium album serine proteinase; (4-nitrophenyl)methyl (4R,5S,6S)-6-[(1R)-1-hydroxyethyl]-4-methyl-7-oxo-3,4-diphenoxy-5-phosphonooxy-1-azabicyclo[3.2.0]hept-2-ene-2-carboxylate	≥80	CAS: 39450-01-6
guanidinium chloride	guanadine hydrochloride; Guanidine, hydrochloride (1:1); Guanidine, monohydrochloride; Guanidine monohydrochloride; GUANIDINE HCL; GUANIDINE HYDROCHLORIDE; Iminourea hydrochloride; Carbamidine hydrochloride; Aminomethanamidine hydrochloride; Aminoformamidine hydrochloride; Salt of hydrogen chloride and guanidine (1:1)	≥60 - ≤80	CAS: 50-01-1

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

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

<b>Ingestion</b>	Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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**Most important symptoms/effects, acute and delayed****Potential acute health effects**

<b>Eye contact</b>	Causes serious eye irritation.
<b>Inhalation</b>	May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>Skin contact</b>	Causes skin irritation.
<b>Ingestion</b>	Harmful if swallowed.

**Over-exposure signs/symptoms**

<b>Eye contact</b>	Adverse symptoms may include the following: pain or irritation watering redness
<b>Inhalation</b>	Adverse symptoms may include the following: respiratory tract irritation coughing wheezing and breathing difficulties asthma
<b>Skin contact</b>	Adverse symptoms may include the following: irritation redness
<b>Ingestion</b>	No specific data.

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

<b>Notes to physician</b>	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
<b>Specific treatments</b>	No specific treatment.
<b>Protection of first-aiders</b>	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

**See toxicological information (Section 11)****Section 5. Fire-fighting measures****Extinguishing media**

<b>Suitable extinguishing media</b>	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	None known.
<b>Specific hazards arising from the chemical</b>	In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Hazardous thermal decomposition products</b>	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides halogenated compounds
<b>Special protective actions for fire-fighters</b>	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Special protective equipment for fire-fighters</b>	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

**Section 6. Accidental release measures****Personal precautions, protective equipment and emergency procedures**

<b>For non-emergency personnel</b>	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
<b>For emergency responders</b>	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".



<b>Environmental precautions</b>	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
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**Methods and materials for containment and cleaning up**

<b>Small spill</b>	Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
<b>Large spill</b>	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

**Section 7. Handling and storage****Precautions for safe handling**

<b>Protective measures</b>	Put on appropriate personal protective equipment (see Section 8). Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
<b>Advice on general occupational hygiene</b>	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
<b>Conditions for safe storage, including any incompatibilities</b>	Do not store above the following temperature: -20°C (-4°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

**Section 8. Exposure controls/personal protection****Control parameters****Occupational exposure limits****Ingredient name**

proteases  
guanidinium chloride

**Exposure limits**

None.  
None.

**Biological exposure indices**

No exposure indices known.

**Appropriate engineering controls**

Use only with adequate ventilation. If user operations generate dust, fumes, gas, 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.

**Environmental exposure controls**

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

**Individual protection measures****Hygiene measures**

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

**Eye/face protection**

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

**Skin protection****Hand protection**

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

**Body protection**

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.



Other skin protection	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state	Liquid.
Color	Colorless.
Odor	Faint odor. Irritant.
Odor threshold	Not available.
pH	7
Melting point/freezing point	Decomposes
Boiling point or initial boiling point and boiling range	Decomposes
Flash point	Not applicable.
Burning time	Not applicable.
Burning rate	Not applicable.
Evaporation rate	Not available.
Flammability	Non-flammable but will burn on prolonged exposure to flame or high temperature.
Lower and upper explosive (flammable) limits	Not available.
Vapor pressure	Not available.

Ingredient name	Vapor Pressure at 20°C			Vapor pressure at 50°C		
	mm Hg	kPa	Method	mm Hg	kPa	Method
water	17.5	2.3				
Sorbitan monolaurate, ethoxylated	0	0				

Relative vapor density	Not available.
Relative density	Not available.
Solubility(ies)	

Media	Result
cold water	Easily soluble
hot water	Easily soluble

Solubility in water	Not available.
Partition coefficient: n-octanol/ water	Not applicable.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
SADT	Not available.
Viscosity	Dynamic (room temperature): Not available. Kinematic (room temperature): Not available. Kinematic (40°C (104°F)): Not available.
Flow time (ISO 2431)	Not available.

Particle characteristics

Median particle size	Not applicable.
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Section 10. Stability and reactivity

Reactivity	No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	No specific data.

Incompatible materials	No specific data.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name  
guanidinium chloride

Result  
**Rat - Oral - LD50**  
475 mg/kg  
Toxic effects: Behavioral - Altered sleep time (including change in righting reflex) Behavioral - Excitement Gastrointestinal - Hypermotility, diarrhea

Conclusion/Summary  
[Product] Not available.

Ingredient name  
proteases

Conclusion/Summary  
To the best of our knowledge, the toxicological properties of this substance have not been thoroughly investigated.

Skin corrosion/irritation

Not available.

Conclusion/Summary  
[Product] Not available.

Serious eye damage/eye irritation

Not available.

Conclusion/Summary  
[Product] Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary  
[Product] Not available.

Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary  
[Product] Not available.

Respiratory

Conclusion/Summary  
[Product] Not available.

Germ cell mutagenicity

Not available.

Conclusion/Summary  
[Product] Not available.

Carcinogenicity

Not available.

Conclusion/Summary  
[Product] Not available.

Ingredient name  
proteases

Conclusion/Summary  
To the best of our knowledge, the toxicological properties of this substance have not been thoroughly investigated.

Reproductive toxicity

Not available.

**Conclusion/Summary  
[Product]** Not available.

**Specific target organ toxicity (single exposure)**

**Product/ingredient name**

proteases

**Result**

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

**Specific target organ toxicity (repeated exposure)**

Not available.

**Aspiration hazard**

Not available.

**Information on the likely routes of exposure** Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

**Potential acute health effects**

<b>Eye contact</b>	Causes serious eye irritation.
<b>Inhalation</b>	May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>Skin contact</b>	Causes skin irritation.
<b>Ingestion</b>	Harmful if swallowed.

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

<b>Eye contact</b>	Adverse symptoms may include the following: pain or irritation watering redness
<b>Inhalation</b>	Adverse symptoms may include the following: respiratory tract irritation coughing wheezing and breathing difficulties asthma
<b>Skin contact</b>	Adverse symptoms may include the following: irritation redness
<b>Ingestion</b>	No specific data.

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

**Short term exposure**

<b>Potential immediate effects</b>	Not available.
<b>Potential delayed effects</b>	Not available.

**Long term exposure**

<b>Potential immediate effects</b>	Not available.
<b>Potential delayed effects</b>	Not available.

**Potential chronic health effects**

Not available.

**Conclusion/Summary  
[Product]** Not available.

<b>General</b>	Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
<b>Carcinogenicity</b>	No known significant effects or critical hazards.
<b>Mutagenicity</b>	No known significant effects or critical hazards.
<b>Reproductive toxicity</b>	No known significant effects or critical hazards.

**Numerical measures of toxicity**

**Acute toxicity estimates**



Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
Proteinase K	710.3	N/A	N/A	N/A	N/A
guanidinium chloride	475	N/A	N/A	N/A	N/A

## Section 12. Ecological information

### Toxicity

Not available.

**Conclusion/Summary [Product]** Not available.

### Persistence and degradability

Not available.

<b>Product/ingredient name</b>	<b>Aquatic half-life</b>	<b>Photolysis</b>	<b>Biodegradability</b>
guanidinium chloride	-	-	Not readily

### Bioaccumulative potential

<b>Product/ingredient name</b>	<b>LogP<sub>ow</sub></b>	<b>BCF</b>	<b>Potential</b>
guanidinium chloride	-1.7	-	Low

### Mobility in soil

**Soil/Water partition coefficient** Not available.

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

## Section 13. Disposal considerations

**Disposal methods** The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**RCRA classification** Not classified

## Section 14. Transport information

Product is not regulated as dangerous goods for transport.

## Section 15. Regulatory information

**U.S. Federal regulations** **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined  
**Clean Water Act (CWA) 311:** edetic acid

### TSCA 12(b) - Chemical export notification

Not applicable.

<b>Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)</b>	Not listed
<b>Clean Air Act Section 602 Class I Substances</b>	Not listed
<b>Clean Air Act Section 602 Class II Substances</b>	Not listed
<b>DEA List I Chemicals (Precursor Chemicals)</b>	Not listed
<b>DEA List II Chemicals (Essential Chemicals)</b>	Not listed

### SARA 302/304

#### Composition/information on ingredients

No products were found.

**SARA 304 RQ** Not applicable.

### SARA 311/312





<b>Classification</b>		ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
<b><u>Composition/information on ingredients</u></b>		
<b>Name</b>	<b>%</b>	<b>Classification</b>
proteases	100	SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A RESPIRATORY SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
guanidinium chloride	66.87	ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A
<b><u>State regulations</u></b>		
<b>Massachusetts</b>	None of the components are listed.	
<b>New York</b>	None of the components are listed.	
<b>New Jersey</b>	None of the components are listed.	
<b>Pennsylvania</b>	None of the components are listed.	
<b><u>California Prop. 65</u></b>		
This product does not require a Safe Harbor warning under California Prop. 65.		
<b><u>International regulations</u></b>		
<b><u>Chemical Weapon Convention List Schedules I, II &amp; III Chemicals</u></b>		
Not listed.		
<b><u>Montreal Protocol</u></b>		
Not listed.		
<b><u>Stockholm Convention on Persistent Organic Pollutants</u></b>		
Not listed.		
<b><u>Rotterdam Convention on Prior Informed Consent (PIC)</u></b>		
Not listed.		
<b><u>UNECE Aarhus Protocol on POPs and Heavy Metals</u></b>		
Not listed.		
<b><u>Inventory list</u></b>		
<b>United States</b>	Not determined.	
<b>Canada inventory</b>	Not determined.	


Section 16. Other information

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



<b>Procedure used to derive the classification</b>		<b>Justification</b>
<b>Classification</b>		
ACUTE TOXICITY (oral) - Category 4	Calculation method	
SKIN IRRITATION - Category 2	Calculation method	
EYE IRRITATION - Category 2A	Calculation method	
RESPIRATORY SENSITIZATION - Category 1	Calculation method	
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method	
<b>History</b>		
<b>Date of printing</b>	2/20/2026	
<b>Date of issue/Date of revision</b>	2/20/2026	
<b>Date of previous issue</b>	7/22/2025	
<b>Version</b>	7.02	

	sds_author@cytiva.com
<b>Key to abbreviations</b>	ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) N/A = Not available UN = United Nations
<b>References</b>	Not available.

 Indicates information that has changed from previously issued version.

**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.

