

Material Safety Data Sheet

1. Product and company identification

Product name : PageRuler Low Range Unstained Protein Ladder
Supplier : Thermo Fisher Scientific
 Pierce Biotechnology
 P.O. Box 117
 Rockford, IL 61105
 United States
 815.968.0747 or
 800.874.3723

Manufacturer : Thermo Fisher Scientific
 Pierce Biotechnology
 P.O. Box 117
 Rockford, IL 61105
 United States
 815.968.0747
 800.874.3723

Product No. : 0026632 0026633
MSDS # : 8537
Validation date : 10/11/2010.
Print date : 10/11/2010.
Responsible name : **MSDS Specialist**
In case of emergency : CHEMTREC: 800.424.9300
 OUTSIDE US: 202.483.7616

Use of Substance/Preparation : Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.

2. Hazards identification

Physical state : Liquid.
Odor : Unpleasant.
OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Emergency overview : WARNING !
 HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.
 Toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by skin contact. Avoid exposure - obtain special instructions before use. Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Contains material that can cause target organ damage. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Inhalation : Toxic by inhalation. Irritating to respiratory system.
Ingestion : Toxic if swallowed.
Skin : Toxic in contact with skin. Irritating to skin. May cause sensitization by skin contact.
Eyes : Irritating to eyes.
Potential chronic health effects
Chronic effects : Contains material that can cause target organ damage.

10/11/2010.

1/11

PageRuler Low Range Unstained Protein Ladder

2. Hazards identification

Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.
Target organs : Contains material which causes damage to the following organs: kidneys, lungs, mucous membranes, upper respiratory tract, skin, eyes, central nervous system (CNS). Contains material which may cause damage to the following organs: liver, gastrointestinal tract.

Over-exposure signs/symptoms
Inhalation : Adverse symptoms may include the following:
 respiratory tract irritation
 coughing

Ingestion : No specific data.
Skin : Adverse symptoms may include the following:
 irritation
 redness

Eyes : Adverse symptoms may include the following:
 pain or irritation
 watering
 redness

Medical conditions aggravated by over-exposure : Pre-existing respiratory, skin and digestive disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

The preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : Not classified.

See toxicological information (section 11)

3. Composition/information on ingredients

United States

Name	CAS number	%
Glycerol	56-81-5	25 - 45
Sodium Dodecyl Sulfate	151-21-3	1 - 3
Dithiothreitol (DTT)	3483-12-3	1 - 3

Europe

Substance/preparation : Preparation

Ingredient name	CAS number	%	EC number	Classification
Glycerol	56-81-5	25 - 45	200-289-5	Not classified. [2]
Sodium Dodecyl Sulfate	151-21-3	1 - 3	205-788-1	R10 Xn; R21/22 Xi; R36/37/38 [1]
Dithiothreitol (DTT)	3483-12-3	1 - 3	222-468-7	Xn; R22 [1]

10/11/2010.

2/11

3. Composition/information on ingredients

Xi;
R36/37/38

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

[1] Substance classified with a health or environmental hazard

[2] Substance with a workplace exposure limit

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

4. First aid measures

- Inhalation** : Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. 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. 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.
- Ingestion** : Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Eye contact** : Get medical attention immediately. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing or wear gloves.

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

5. Fire-fighting measures

Flammability of the product : In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.

Special exposure hazards : 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.

Hazardous combustion products : Decomposition products may include the following materials:
carbon oxides
sulfur oxides
metal oxide/oxides

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 : 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 (see section 8).

Environmental precautions : 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).

Large spill : 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. 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 (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling : Put on appropriate personal protective equipment (see section 8). 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. Persons with a history of skin sensitization problems 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 breathe vapor or mist. Do not ingest. 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.

PageRuler Low Range Unstained Protein Ladder

7 . Handling and storage

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

8 . Exposure controls/personal protection

Product name

Exposure limits

United States

glycerin

ACGIH (United States).
TWA: 10 mg/m³
ACGIH TLV (United States).
TWA: 10 mg/m³ 8 hour(s). Form: Total particulates
TWA: 10 mg/m³ 8 hour(s). Form: Mist
OSHA PEL (United States, 11/2006).
TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction
TWA: 15 mg/m³ 8 hour(s). Form: Total dust
OSHA PEL 1989 (United States, 3/1989).
TWA: 5 mg/m³ 8 hour(s). Form: Respirable fraction
TWA: 10 mg/m³ 8 hour(s). Form: Total dust
ACGIH TLV (United States).
TWA: 10 mg/m³ 8 hour(s). Form: Total particulates
OSHA PEL (United States).
TWA: 15 mg/m³ 8 hour(s). Form: Total dust
OSHA PEL (United States). Notes: Respirable
TWA: 15 mg/m³ 8 hour(s).

Europe

glycerin

ACGIH (United States).
TWA: 10 mg/m³
ACGIH TLV (United States).
TWA: 10 mg/m³ 8 hour(s). Form: Total particulates
TWA: 10 mg/m³ 8 hour(s). Form: Mist
TWA: 10 mg/m³ 8 hour(s). Form: Total particulates

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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.

Personal protection

PageRuler Low Range Unstained Protein Ladder

8 . Exposure controls/personal protection

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

Hands : 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.

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.

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.

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.

9 . Physical and chemical properties

Physical state : Liquid.

Color : Blue.

Odor : Unpleasant.

pH : 7.5

Dispersibility properties : Dispersible in the following materials: cold water and hot water.

Solubility : Easily soluble in the following materials: cold water and hot water.

10 . Stability and reactivity

Chemical stability : The product is stable. Under normal conditions of storage and use, hazardous polymerization 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.

Possibility of hazardous reactions : Will not occur.

11 . Toxicological information

United States

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
-------------------------	--------	---------	------	----------

PageRuler Low Range Unstained Protein Ladder

11 . Toxicological information

glycerin	LD50 Dermal	Rat	>21900 mg/kg	-
	LD50 Intraperitoneal	Rat	4420 mg/kg	-
	LD50 Intravenous	Rat	5566 mg/kg	-
	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Oral	Rat	12600 mg/kg	-
	LD50 Subcutaneous	Rat	100 mg/kg	-
	LDLo Intramuscular	Rat	10 mL/kg	-
	LDLo Intramuscular	Rat	10 mg/kg	-
	LDLo Intramuscular	Rat	4 mL/kg	-
	LDLo Intramuscular	Rat	>5000 mg/kg	-
	LDLo Intramuscular	Rat	4000 mg/kg	-
	LDLo Intramuscular	Rat	8 mL/kg	-
	LDLo Intramuscular	Rat	>570 mg/m ³	1 hours
	LD50 Oral	Rat	400 mg/kg	-
	2,3-butanediol, 1,4-dimercapto-, (r*,r*)-sodium dodecyl sulphate	LD50 Dermal	Rabbit	580 mg/kg
LD50 Intraperitoneal		Rat	210 mg/kg	-
LD50 Intravenous		Rat	118 mg/kg	-
LD50 Oral		Rat	1288 mg/kg	-
LC50 Inhalation		Rat	>3900 mg/m ³	1 hours
Dusts and mists				

Conclusion/Summary : Not available.

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
glycerin	Sub-chronic	Rat	16800 mg/kg	28 days
	TD50 Oral			Continuous
	Sub-chronic	Rat	96 g/kg	30 days
	TD50 Oral			Intermittent

Conclusion/Summary : Not available.

Carcinogenicity

Product/ingredient name	Result	Species	Dose	Exposure
glycerin	Equivocal - Oral - TDLo	Mouse	87.5 g/kg	25 weeks Intermittent

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
glycerin	-	-	-	-	-	None.
sodium dodecyl sulphate	A2	-	-	None.	-	None.
2,3-butanediol, 1,4-dimercapto-, (r*,r*)-	-	-	-	None.	-	None.

Mutagenicity

10/11/2010.

7/11

PageRuler Low Range Unstained Protein Ladder

11 . Toxicological information

Product/ingredient name	Test	Experiment	Result
glycerin	DNA Inhibition Cytogenetic Analysis	Mammalian-Human Mammalian-Animal	Positive Positive

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility	Development toxin	Species	Dose	Exposure
glycerin	-	-	-	Rat - Male	Unreported: 862 mg/kg	1 days
	-	Positive	-	Rat - Male	Oral: 100 mg/kg	1 days
	-	-	-	Mammal - species unspecified - Male	Unreported: 119 mg/kg	1 days
	-	Positive	-	Rat - Male	Unreported: 1600 mg/kg	1 days
	-	-	-	Rat - Male	Unreported: 280 mg/kg	2 days
sodium dodecyl sulphate	-	-	-	Mouse	Dermal: 480 mg/kg	-

Conclusion/Summary : Not available.

Europe

- Chronic effects** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.

12 . Ecological information

Environmental effects : No known significant effects or critical hazards.

United States

Aquatic ecotoxicity

Conclusion/Summary : Not available.

10/11/2010.

8/11

PageRuler Low Range Unstained Protein Ladder

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. 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. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*
DOT Classification	Not regulated.	-	-	-
IATA-DGR Class	Not available.	Not available.	Not available.	-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Toxic material
Irritating material
Sensitizing material
Target organ effects

U.S. Federal regulations : TSCA 8(a) IUR: glycerin
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: sodium dodecyl sulphate; glycerin
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: sodium dodecyl sulphate: Immediate (acute) health hazard, Delayed (chronic) health hazard; glycerin: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: No products were found.
Clean Water Act (CWA) 311: No products were found.
Clean Air Act (CAA) 112 accidental release prevention: No products were found.
Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

Canada

WHMIS (Canada) : Class D-1B: Material causing immediate and serious toxic effects (Toxic).
Class D-2B: Material causing other toxic effects (Toxic).

PageRuler Low Range Unstained Protein Ladder

15 . Regulatory information

Canadian lists : **CEPA Toxic substances**: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: None of the components are listed.
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

Canada inventory : **Canada inventory**: At least one component is not listed in DSL but all such components are listed in NDSL.

EU regulations

Risk phrases : This product is not classified according to EU legislation.

International regulations

International lists : **Australia inventory (AICS)**: Not determined.
China inventory (IECSC): Not determined.
Korea inventory (KECI): Not determined.
Philippines inventory (PICCS): Not determined.
Japan inventory (ENCS): Not determined.

16 . Other information

Label requirements : HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.

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

Health	2
Flammability	0
Physical hazards	0

The customer is responsible for determining the PPE code for this material.

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



Date of printing : 10/11/2010.
Date of issue : 10/11/2010.
Date of previous issue : No previous validation.
Version : 1

Indicates information that has changed from previously issued version.

Full text of R-phrases referred to in sections 2 and 3 - Europe : R10- Flammable.
R22- Harmful if swallowed.
R21/22- Harmful in contact with skin and if swallowed.
R36/37/38- Irritating to eyes, respiratory system and skin.

16 . Other information

Full text of classifications : Xn - Harmful
referred to in sections 2 and Xi - Irritant
3 - Europe

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.

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