

Material Safety Data Sheet



NORGEN
BIOTEK CORPORATION

RNA Ladders

1 . Product and company identification

Common name : RNA Ladders
Synonym : RNA Marker.
Code : 15096 (2X loading buffer), 15097 (1X loading buffer), 15002, 15003.
Material uses : RNA ladder mixed with loading dye. RNA sample buffer.
MSDS authored by: : Kemika XXI Inc. + 1-450- 01/30/2006
435-7475

Supplier/Manufacturer

Norgen Biotek Corp.
344 Merritt St.
St. Catharines, Ontario
Canada L2T 1K6
Tel: (905) 227-8848
Fax: (905) 227-1061
Toll Free: 1-866-667-4362

In case of emergency

CANUTEC (613) 996-6666
CHEMTREC, U.S. : (800) 424-9300
International: (703) 527-3887

2 . Hazards identification

Physical state : Liquid.
Color : Blue.
Hazard status : This material is classified hazardous under the WHMIS Controlled Product Regulation in Canada.
Emergency overview : WARNING !
MAY BE FATAL IF INHALED OR SWALLOWED.
CANCER HAZARD.
CONTAINS MATERIAL WHICH CAN CAUSE CANCER.
CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.
CONTAINS MATERIAL WHICH CAUSES DAMAGE TO THE FOLLOWING ORGANS:
BLOOD, LUNGS, REPRODUCTIVE SYSTEM, MUCOUS MEMBRANES, RESPIRATORY TRACT, SKIN, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA.
COMBUSTIBLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FIRE.
Do not ingest. Avoid contact with skin and clothing. Do not breathe vapor or mist. Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Risk of cancer depends on duration and level of exposure.
Routes of entry : Dermal contact. Eye contact. Inhalation. Ingestion.
Potential acute health effects
Eyes : Severely irritating to eyes.
Skin : Severely irritating to the skin.
Inhalation : Very toxic by inhalation. Severely irritating to the respiratory system.
Ingestion : Very toxic if swallowed.
Potential chronic health effects : Carcinogenic effects Classified None. by NIOSH [formamide]. Classified 1 (Proven for humans.) by IARC, + (Proven.) by OSHA, + (Proven.) by NIOSH [Formaldehyde]. Classified 3 (Possible for humans.) by European Union [Formaldehyde]. Classified A2 (Suspected for humans.) by ACGIH, SUSPECTED, 2 (Reasonably anticipated to be human carcinogens.) by NTP [Formaldehyde].
Mutagenic effects Not available.
Teratogenic effects: Not available.

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

See toxicological information (section 11)

3 . Composition/information on ingredients

Canada			
Name	CAS number	%	
Formamide	75-12-7	30 - 40	
Formaldehyde	50-00-0	15 - 30	

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.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 20 minutes. Get medical attention.
- Inhalation** : If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention.
- Ingestion** : Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention.
- 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. 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.

5 . Fire-fighting measures

- Flammability of the product** : Combustible.
- Products of combustion** : These products are carbon oxides, nitrogen oxides.
- Extinguishing media**
 - Suitable** : Use dry chemical, carbon dioxide, water spray (fog) or foam.
 - Not suitable** : Do not use water jet.
- Special exposure hazards** : Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
- 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. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment. Do not touch or walk through spilled material.
- 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) and use a non-sparking or explosion-proof means to transfer material to a sealable, appropriate 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. Do not breathe vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling.

Storage : Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

8 . Exposure controls/personal protection

Canada

Product name

Formamide

Formaldehyde

Exposure limits

ACGIH TLV (Canada, 1/2005). Skin

TWA: 18 mg/m³ 8 hour/hours. Form: All forms.

TWA: 10 ppm 8 hour/hours. Form: All forms.

ACGIH TLV (Canada, 1/2005).

CEIL: 0,37 mg/m³ Form: All forms.

CEIL: 0,3 ppm Form: All forms.

Consult local authorities for acceptable exposure limits.

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. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes : Splash goggles.

Skin : Lab coat.

Respiratory : Not required if handled in a ventilated enclosure.

Hands : Natural rubber (latex).



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 compounds and before eating, smoking and using the lavatory and at the end of the day. Follow good industrial hygiene practice.

9 . Physical and chemical properties

Physical state	: Liquid.
Flash point	: Closed cup: >60°C (140°F).(Pensky-Martens.)
Auto-ignition temperature	: The lowest known value is 500°C (932°F) (Formamide).
Color	: Blue.
pH	: 7.5
Melting/freezing point	: May start to solidify at 2.85°C (37.1°F) based on data for: Formamide.
Relative density	: Weighted average: 1.09 (Water = 1)
Vapor density	: The highest known value is 1.56 (Air = 1) (Formamide).
Evaporation rate	: 0.004 (Formamide) compared with Butyl acetate.
Solubility	: Soluble in cold water, hot water, methanol. Insoluble in diethyl ether, acetone.

10 . Stability and reactivity

Stability and reactivity	: The product is stable.
Incompatibility with various substances	: Reactive with oxidizing materials, acids and alkalis.
Hazardous polymerization	: Will not occur.
Conditions of reactivity	: Combustible.

11 . Toxicological information

Product/ingredient name	Test	Result	Route	Species
Formamide	LD50	5577 mg/kg	Oral	Rat
	LD50	3150 mg/kg	Oral	Mouse
	LD50	3150 mg/kg	Oral	Mammal
Formaldehyde	LD50	100 mg/kg	Oral	Rat
	LD50	42 mg/kg	Oral	Mouse
	LD50	260 mg/kg	Oral	Guinea pig
	LC50	>0.3 mg/l (4 hour/hours)	Inhalation	Rat

Acute Effects

Eyes	: Severely irritating to eyes.
Skin	: Severely irritating to the skin.
Inhalation	: Very toxic by inhalation. Severely irritating to the respiratory system.
Ingestion	: Very toxic if swallowed.
Potential chronic health effects	: Carcinogenic effects Classified None. by NIOSH [formamide]. Classified 1 (Proven for humans.) by IARC, + (Proven.) by OSHA, + (Proven.) by NIOSH [Formaldehyde]. Classified 3 (Possible for humans.) by European Union [Formaldehyde]. Classified A2 (Suspected for humans.) by ACGIH, SUSPECTED, 2 (Reasonably anticipated to be human carcinogens.) by NTP [Formaldehyde]. Mutagenic effects Not available. Teratogenic effects Not available.
Target organs	: Contains material which causes damage to the following organs: blood, lungs, the reproductive system, mucous membranes, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

12 . Ecological information

Ecotoxicity data

Product/ingredient name	Species	Period	Result
Formaldehyde	Daphnia pulex (EC50)	48 hour/hours	5.8 mg/l
	Daphnia magna (EC50)	48 hour/hours	14 mg/l
	Daphnia magna (EC50)	48 hour/hours	14.6 mg/l
	Oncorhynchus mykiss (LC50)	96 hour/hours	1.41 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	1.51 mg/l
	Lepomis macrochirus (LC50)	96 hour/hours	1.79 mg/l

Environmental precautions : No known significant effects or critical hazards.

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

Toxicity of the products of biodegradation : The products of degradation are as toxic as 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

NAERG : Not applicable.

Regulatory information

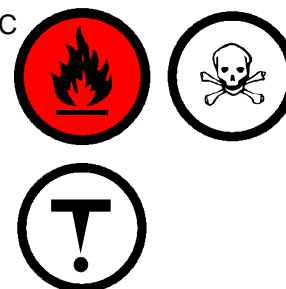
UN/ IMDG/IATA TDG : Not regulated by any transport mode.

15 . Regulatory information

Canada

WHMIS (Canada)

- : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
- Class D-1A: Material causing immediate and serious toxic effects (Very toxic).
- Class D-2A: Material causing other toxic effects (Very toxic).
- Class D-2B: Material causing other toxic effects (Toxic).



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 : This product, (and its ingredients) is (are) listed on national inventories, or is (are) exempted from being listed, Australia (AICS), in Europe (EINECS/ELINCS), in Korea (TCCL), in Japan (METI), in the Philippines (RA6969).

16 . Other information

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

HMIS RATING

Health	*	2
Fire hazard		1
Physical Hazard		0
Personal protection		B

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
Version

- : 01/30/2006
- : 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.