

Material Safety Data Sheet

Australia

English

1. Identification of the material and supplier

Product name Biotin hydrazide, 5.0 mM; part of 'ECL™ Glycoprotein Detection module, 25 membrane reactions'

Catalogue Number RPN2190



Component Number 1058741

Company details**Manufacturer**

GE Healthcare UK Ltd
Amersham Place
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Supplier

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ADGUses

Area of application Industrial applications.
Material uses Analytical chemistry. Research.
Product type Liquid.


2. Hazards identification

Classification Repr. Cat. 2; R61
Xn; R20/21
Xi; R36

Risk phrases R61- May cause harm to the unborn child.
R20/21- Also harmful by inhalation and in contact with skin.
R36- Irritating to eyes.

Safety phrases S53- Avoid exposure - obtain special instructions before use.
S36/37- Wear suitable protective clothing and gloves.

Statement of hazardous/dangerous nature

 HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.

3. Composition/information on ingredients

Mixture Yes.

Ingredient name

 N,N-dimethylformamide

CAS number

68-12-2

Concentration

99 - 100

Additional information

Other ingredients, determined not to be hazardous according to Safe Work Australia criteria, and not dangerous according to the ADG Code, make up the product concentration to 100%.



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4. First-aid measures

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.
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 it, or wear gloves. Continue to rinse for at least 10 minutes. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Inhalation	Get medical attention immediately. 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. 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.
Ingestion	Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.
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 it, or wear gloves.

5. Fire-fighting measures

Extinguishing media

Suitable	Use dry chemical, CO ₂ , water spray (fog) or foam.
Not suitable	Do not use water jet.
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. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
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.
Hazardous combustion products	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides

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. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour 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).
Methods for cleaning up	Stop leak if without risk. Move containers from spill area. Approach the 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). Use spark-proof tools and explosion-proof equipment. 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. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. 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. Remove contaminated clothing and protective equipment before entering eating areas. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Storage

Store between the following temperatures: 2 to 8°C (35.6 to 46.4°F). Store in accordance with local regulations. Store in a segregated and approved area. 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. Eliminate all ignition sources. Separate from oxidizing materials. 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
N,N-dimethylformamide	<p>Safe Work Australia (Australia, 8/2005). Absorbed through skin.</p> <p>TWA: 30 mg/m³ 8 hour(s).</p> <p>TWA: 10 ppm 8 hour(s).</p>
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. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.
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	
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 or dusts.
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.
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.
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.
Colour	Colourless to light yellow.
Odour	Ammoniacal. / Fish. [Slight]
Odour threshold	100 ppm
Boiling point	Decomposes.
Melting point	Decomposes.
Flash point	Closed cup: 58°C (136.4°F) Open cup: 57°C (134.6°F)
Flammable limits	Lower: 2.2% Upper: 16%
Auto-ignition temperature	445°C (833°F)
Solubility	Easily soluble in the following materials: cold water, hot water and diethyl ether.



10. Stability and reactivity

Stability	The product is stable.
Conditions to avoid	⚠️ Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.
Materials to avoid	Reactive or incompatible with the following materials: oxidizing materials

11. Toxicological information

Potential acute health effects

Inhalation	Harmful by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion	No known significant effects or critical hazards.
Skin contact	Harmful in contact with skin. May cause skin irritation.
Eye contact	Irritating to eyes.

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
⚠️ N,N-DIMETHYLFORMAMIDE	LD Dermal	Rat	>3160 mg/kg	-
	LD50 Dermal	Rat	>3.2 g/kg	-
	LD50 Dermal	Rabbit	4720 mg/kg	-
	LD50 Intraperitoneal	Rat	4 g/kg	-
	LD50 Intraperitoneal	Rat	1400 mg/kg	-
	LD50 Intravenous	Rat	2 g/kg	-
	LD50 Oral	Rat	4000 mg/kg	-
	LD50 Oral	Rat	2000 mg/kg	-
	LD50 Subcutaneous	Rat	3800 mg/kg	-
	LD50 Unreported	Rat	>3 g/kg	-
	LDLo Oral	Rat	2000 mg/kg	-
	LDLo Subcutaneous	Rat	1000 mg/kg	-
	TDLo Oral	Rat	500 mg/kg	-
	TDLo Unreported	Rat	1002 mg/kg	-
	LC50 Inhalation Gas.	Rat	3421 ppm	1 hours
	LC50 Inhalation Gas.	Rat	3421 ppm	3 hours
	LC50 Inhalation Gas.	Rat	1948 ppm	4 hours

Conclusion/Summary Not available.

Potential chronic health effects

Chronic toxicity

Conclusion/Summary Not available.

Carcinogenicity

Conclusion/Summary Not available.

Mutagenicity

Conclusion/Summary Not available.

Teratogenicity

Conclusion/Summary Not available.

Reproductive toxicity

Conclusion/Summary	Not available.
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	May cause birth defects.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Inhalation	⚠️ Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Ingestion	⚠️ Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Skin	⚠️ Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations
Eyes	⚠️ Adverse symptoms may include the following: reduced foetal weight increase in foetal deaths skeletal malformations



Adverse symptoms may include the following:

irritation
watering
redness**Target organs**

Contains material which may cause damage to the following organs: kidneys, liver, digestive system, cardiovascular system, upper respiratory tract, skin, eyes.

12 . Ecological information**Environmental effects**

No known significant effects or critical hazards.

Aquatic ecotoxicity

Product/ingredient name	Test	Result	Species	Exposure
N,N-DIMETHYLFORMAMIDE	-	Acute EC50 14.1 to 14.4 g/L Fresh water	Daphnia - Water flea	48 hours
	-	Acute EC50 8485 mg/L Fresh water	- Daphnia magna	
	-	Acute EC50 13600000 to 15500000 ug/L Fresh water	Daphnia - Water flea	2 days
	-	Acute EC50 11900000 to 13200000 ug/L Fresh water	- Daphnia magna - <24 hours	
	-	Acute EC50 11300000 ug/L Fresh water	Daphnia - Water flea	48 hours
	-	Acute EC50 11000000 to 13900000 ug/L Fresh water	- Daphnia magna - <=96 hours	
	-	Acute EC50 10600000 to 10800000 ug/L Fresh water	Daphnia - Water flea	48 hours
	-	Acute EC50 9800000 to 10700000 ug/L Fresh water	- Daphnia magna - <=24 hours	
	-	Acute EC50 7100000 to 7500000 ug/L Fresh water	Daphnia - Water flea	48 hours
	-	Acute EC50 4500000 to 5200000 ug/L Fresh water	- Daphnia magna - <=6 hours	
	-	Acute LC50 10700 mg/L Fresh water	Fish - Fathead minnow - Pimephales promelas - 28 to 32 days - 0.047 g	96 hours
	-	Acute LC50 10000 mg/L Fresh water	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling) - 5.08 g	96 hours
	-	Acute LC50 10600000 to 10800000 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus - 0.912 g	96 hours
	-	Acute LC50 10500000 to 11900000 ug/L Fresh water	Daphnia - Water flea	48 hours
	-	Acute LC50 10410000 to 18967000 ug/L Fresh water	- Daphnia magna - <=6 hours	
	-	Acute LC50 9800000 to 10700000 ug/L	Fish - Fathead minnow - Pimephales promelas - 30 to 32 days	96 hours
	-	Acute LC50 9800000 to 10700000 ug/L	Fish - Rainbow trout,donaldson trout - Oncorhynchus mykiss - Fingerling	96 hours
	-	Acute LC50 9800000 to 10700000 ug/L	Fish - Fathead minnow - Pimephales promelas - 28 to 32 days - 0.047 g	96 hours



	Fresh water	trout - Oncorhynchus mykiss - Juvenile (Fledgling, Hatchling, Weanling) - 5.08 g	
-	Acute LC50 7100000 to 7500000 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus - Juvenile (Fledgling, Hatchling, Weanling) - 0.912 g	96 hours
-	Acute LC50 >100000 ug/L Marine water	Crustaceans - Common shrimp, sand shrimp - Crangon crangon - Adult	48 hours
-	Acute LC50 13000 to 16000 ul/L Fresh water	Daphnia - Water flea - Daphnia magna - <=24 hours	48 hours
-	Chronic NOEC 6 g/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
-	Chronic NOEC 6000 mg/L Fresh water	Daphnia - Water flea - Daphnia magna - <24 hours	48 hours


Conclusion/Summary Not available.

Other ecological information

Biodegradability

Conclusion/Summary Not available.

Product/ingredient name

 N,N-dimethylformamide

Aquatic half-life

-

Photolysis


>90%; 28 day(s)

Biodegradability

Readily

Bioaccumulative potential

Product/ingredient name

 N,N-dimethylformamide

LogP_{ow}

-

BCF

0.3 to 0.8


Potential

low

Other adverse effects No known significant effects or critical hazards.

13. Disposal considerations

Methods of disposal

 The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

International transport regulations

Not classified.

15. Regulatory information

Standard for the Uniform Scheduling of Drugs and Poisons

Not regulated.

Control of Scheduled Carcinogenic Substances

Ingredient name

Not available.

Schedule

Australia inventory (AICS)

Not determined.

EU Classification

Repr. Cat. 2; R61

Xn; R20/21

Xi; R36

HCS Classification

Combustible liquid

Irritating material

Target organ effects



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16. Other information

History

Date of printing	14 June 2011	Date of previous issue	13 March 2009
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 Indicates information that has changed from previously issued version.

Enquiries regarding MSDS content should be directed to: our local sales office.

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.



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