



Safety Data Sheet

Canada

Section 1. Identification

Product name

Detection reagent 2; part of 'ECL™ direct nucleic acid labelling and detection system'

Catalogue Number

RPN3000



9 0 R P N 3 0 0 0

Component Number

RPN3004V2

Product type

Liquid.

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

Identified uses

Analytical chemistry.

Use in laboratories

Scientific research and development

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

Importer Cytiva Canada
1055 Vernon Dr
Vancouver BC V6A 3P4
Canada
+1 778-956-2584

In case of emergency

INFOTRAC

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

In the United States, call 24 Hour number: 1-800-535-5053

Section 2. Hazard identification

Classification of the substance or mixture TOXIC TO REPRODUCTION (Fertility) - Category 1
TOXIC TO REPRODUCTION (Unborn child) - Category 1
AQUATIC HAZARD (LONG-TERM) - Category 3

GHS label elements

Hazard pictograms



Signal word

Danger

Hazard statements

May damage fertility or the unborn child.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear protective clothing. Wear eye or face protection. Avoid release to the environment.

Response

IF exposed or concerned: Get medical attention.

Storage

Store locked up.



Disposal	Dispose of contents and container in accordance with all local, regional, national and international regulations.
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Section 3. Composition/information on ingredients

Substance/mixture Mixture

Other means of identification Not available.

Ingredient name	Synonyms	% (w/w)	CAS number
Boric acid	Boric acid (H3BO3); Orthoboric acid; boric acid, other than natural boric acid of heading N° 2528; boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight; product consisting of ammonium nitrate, magnesium nitrate, mixture of diammonium phosphate and ammonium sulphate and boric acid; E 284; boracic acid; orthoboric acid; borofax; TRIHYDROXYBORANE; BORON TRIHYDROXIDE; Boracic acid; trioxoboric acid; Trihydroxidoboron	≥0.1 - ≤1	CAS: 10043-35-3
Dimethyl sulfoxide	Methane, 1,1'-sulfinylbis-; Methane, sulfinylbis-; Dimethyl sulphoxide; (methylsulfinyl)methanediethyl sulfoxide; Methyl sulfoxide; METHYLSULFINYL METHANE; SULFINYL BIS(METHANE); DMSO; Methyl sulphoxide; Sulfinylbismethane; SULFOXIDE, DIMETHYL	≤0.1	CAS: 67-68-5

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 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 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	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. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	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. Get medical attention. 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.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	No known significant effects or critical hazards.
Inhalation	No known significant effects or critical hazards.
Skin contact	No known significant effects or critical hazards.
Ingestion	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact	No specific data.
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Inhalation	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

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

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.
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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	No specific data.
Special protective actions for fire-fighters	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.
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.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	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.
For emergency responders	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".
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). Water polluting material. May be harmful to the environment if released in large quantities.

Methods and materials for containment and cleaning up

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. Dispose of via a licensed waste disposal contractor.
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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.
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Section 7. Handling and storage

Precautions for safe handling

Protective measures	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapor or mist. Avoid release to the environment. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. 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.
Advice on general occupational hygiene	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.
Conditions for safe storage, including any incompatibilities	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	Exposure limits
Boric acid	CA Saskatchewan Provincial (Canada, 4/2021) [Borate compounds, inorganic] STEL 15 minutes: 6 mg/m ³ . Form: Inhalable fraction. TWA 8 hours: 2 mg/m ³ . Form: Inhalable fraction.
	CA British Columbia Provincial (Canada, 9/2024) [borate compounds, inorganic] TWA 8 hours: 2 mg/m ³ . Form: Inhalable. STEL 15 minutes: 6 mg/m ³ . Form: Inhalable.
	CA Ontario Provincial (Canada, 6/2019) [Borate compounds, inorganic] TWA 8 hours: 2 mg/m ³ . Form: Inhalable particulate matter.. STEL 15 minutes: 6 mg/m ³ . Form: Inhalable particulate matter..
	CA Quebec Provincial (Canada, 2/2024) [borate, inorganic compounds] STEV 15 minutes: 6 mg/m ³ . Form: inhalable aerosol fraction. TWAEV 8 hours: 2 mg/m ³ . Form: inhalable aerosol fraction.
Dimethyl sulfoxide	OARS WEEL (United States, 9/2024) TWA 8 hours: 250 ppm.

Biological exposure indices

No exposure indices known.

Appropriate engineering controls	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: safety glasses with side-shields.
<u>Skin protection</u>	
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 and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

Physical state	Liquid.						
Color	Colorless.						
Odor	Odorless.						
Odor threshold	Not available.						
pH	Not available.						
Melting point/freezing point	Not available.						
Boiling point or initial boiling point and boiling range	Not available.						
Flash point	Not applicable.						
Burning time	Not applicable.						
Burning rate	Not applicable.						
Evaporation rate	Not available.						
Flammability	Not considered to be flammable.						
Lower and upper explosive (flammable) limits	Not available.						
Vapor pressure	Not available.						
	Vapor Pressure at 20°C		Vapor pressure at 50°C				
	Ingredient name	mm Hg	kPa	Method	mm Hg	kPa	Method
	water	17.5	2.3				
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.						
Miscible with water	Yes.						
Partition coefficient: n-octanol/water	Not applicable.						
Auto-ignition temperature	Not available.						
Decomposition temperature	Not available.						
SADT	Not available.						
Viscosity	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	Result
Boric acid	Rat - Oral - LD50 2660 mg/kg
Dimethyl sulfoxide	Rat - Oral - LD50 14500 mg/kg Toxic effects: Eye - Hemorrhage Eye - Conjunctive irritation Rat - Dermal - LD50 40000 mg/kg
Conclusion/Summary [Product]	Not available.

Skin corrosion/irritation

Not available.

Conclusion/Summary [Product]	Not available.
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Serious eye damage/eye irritation

Not available.

Conclusion/Summary [Product]	Not available.
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Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product]	Not available.
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Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary [Product]	Not available.
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Respiratory

Conclusion/Summary [Product]	Not available.
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Germ cell mutagenicity

Not available.

Conclusion/Summary [Product] Not available.

Carcinogenicity

Not available.

Conclusion/Summary [Product] Not available.

Classification

Product/ingredient name	IARC	NTP	ACGIH
Boric acid	-	-	A4

Reproductive toxicity

Not available.

Conclusion/Summary [Product] Not available.

Ingredient name	Conclusion/Summary
Boric acid	Reproductive toxin

Specific target organ toxicity (single exposure)

Not available.

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

Eye contact	No known significant effects or critical hazards.
Inhalation	No known significant effects or critical hazards.
Skin contact	No known significant effects or critical hazards.
Ingestion	No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	No specific data.
Inhalation	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Skin contact	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations
Ingestion	Adverse symptoms may include the following: reduced fetal weight increase in fetal deaths skeletal malformations

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

Short term exposure

Potential immediate effects Not available.
Potential delayed effects Not available.

Long term exposure

Potential immediate effects Not available.
Potential delayed effects Not available.

Potential chronic health effects

Not available.

Conclusion/Summary [Product]	Not available.
General	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Reproductive toxicity	May damage fertility or the unborn child.

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)
Boric acid	2660	N/A	N/A	N/A	N/A
Dimethyl sulfoxide	14500	40000	N/A	N/A	N/A

Section 12. Ecological information**Toxicity****Product/ingredient name**

Boric acid

Result**Chronic - NOEC - Fresh water**

Fish - Rainbow trout,donaldson trout - *Oncorhynchus mykiss*
2100 µg/l [87 days]

Effect: Mortality

Chronic - NOEC - Fresh water

Daphnia - Water flea - *Daphnia magna*

Age: <24 hours

6000 µg/l [21 days]

Effect: Reproduction

Acute - LC50 - Fresh water

US EPA

Crustaceans - Water flea - *Ceriodaphnia dubia*

Age: <24 hours

45.5 mg/l [48 hours]

Effect: Mortality

Acute - LC50 - Marine water

OECD

Fish - Red sea bream - *Pagrus major*

Weight: 0.6 g

75 mg/l [96 hours]

Effect: Mortality

Acute - LC50 - Fresh water

Fish - Fathead minnow - *Pimephales promelas*

Age: 31 days; Size: 15.8 mm; Weight: 0.062 g

34 g/l [96 hours]

Effect: Mortality

Chronic - NOEC - Fresh water

Fish - Guppy - *Poecilia reticulata* - Adult

6 ppb [16 weeks]

Effect: Mortality

Acute - EC50 - Marine water

OECD

Algae - Diatom - *Nitzschia pungens*

18.299 mg/l [96 hours]

Effect: Population

Chronic - NOEC - Marine water

OECD

Dimethyl sulfoxide



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Algae - Diatom - *Nitzschia pungens*
 3323 µg/l [96 hours]
Effect: Population
Acute - LC50 - Marine water
 OECD
 Crustaceans - Brine shrimp - *Artemia sp.*
Age: ≤24 hours
 37.437 mg/l [48 hours]
Effect: Mortality
Chronic - NOEC - Fresh water
 OECD
 Daphnia - Water flea - *Daphnia magna* - Juvenile (Fledgling, Hatchling, Weanling)
Age: 6 days
 100 µl/l [21 days]
Effect: Reproduction

Conclusion/Summary [Product] Not available.

Persistence and degradability

Not available.

Conclusion/Summary [Product] Not available.

Product/ingredient name Dimethyl sulfoxide	Aquatic half-life -	Photolysis 31%; 28 day(s)	Biodegradability Not readily
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Bioaccumulative potential

Product/ingredient name Boric acid Dimethyl sulfoxide	LogP_{ow} -1.09 -1.35	BCF -	Potential Low Low
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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.

Section 14. Transport information

	TDG Classification	DOT Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.



Additional information

Special precautions for user **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI None of the components are listed.

CEPA Toxic substances None of the components are listed.

International regulations**Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UN ECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Canada Not determined.

United States Not determined.

Section 16. Other information

History

Date of printing 2/12/2026

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Version 8.04

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Key to abbreviations

ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
HPR = Hazardous Products Regulations
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

Procedure used to derive the classification**Classification****Justification**

TOXIC TO REPRODUCTION (Fertility) - Category 1	Calculation method
TOXIC TO REPRODUCTION (Unborn child) - Category 1	Calculation method
AQUATIC HAZARD (LONG-TERM) - Category 3	Calculation method

References

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.



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