

## Section 1 - Identification

**Product Name**
**CO2 Liq**
**Synonyms**

Carbon Dioxide Reagent; Bicarbonate Reagent

**Product Code**
**CDT28321**
**Address**

 ThermoFisher Scientific Australia Pty Ltd  
 5 Caribbean Drive, Scoresby  
 VICTORIA 3179, Australia

**Emergency Tel.**
**CHEMTREC®**  
**03 9757 4559 or +613 9757 4559**
**Telephone / Fax Numbers**

 Tel: 1300 735 292  
 Fax: 1800 067 639

**E-mail address**

ANZinfo@thermofisher.com

**Recommended Use**

In vitro diagnostic.

**Uses advised against**

 This product does not contain any substance(s) on the Illicit Drug Precursors/Reagents list.  
 This product does not contain any substance(s) subject to Prohibition, Authorization or  
 Restriction. This product contains one or more substance(s) listed on the voluntary  
 National Code of Practice for Chemicals of Security Concern.

## Section 2 - Hazard(s) Identification

**Classification under Safe Work Australia**

Classified as not hazardous according to criteria of Safe Work Australia.

**Physical hazards**

No hazards identified

**Health hazards**

No hazards identified

**Environmental hazards**

No hazards identified

**Label Elements**

None required

**Other information**

No information available

This product does not contain any known or suspected endocrine disruptors

## Section 3 - Composition and Information on Ingredients

Component	CAS No	Weight %
Water	7732-18-5	> 85%
Proprietary ingredient	@CAS	< 10%
Tris (hydroxymethyl) aminomethane	77-86-1	< 2%
HEPES	7365-45-9	< 2%
2-Propenoic acid, 2-(phosphonoxy)-, compound with cyclohexanamine (1:1)	10526-80-4	< 2%
beta-Nicotinamide adenine dinucleotide, disodium salt	606-68-8	< 2%
Acetic acid, aminoxy-, monosodium salt	565-73-1	< 2%
Magnesium sulfate	7487-88-9	< 2%
Sodium azide	26628-22-8	< 0.1%
Bovine Serum Albumin	9048-46-8	< 1%
Proprietary ingredient	@CAS	< 1%
Carboxylase, phosphopyruvate (phosphate)	9067-77-0	< 1%
Dehydrogenase, malate	9001-64-3	< 1%

## Section 4 - First Aid Measures

<b>Inhalation</b>	Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.
<b>Ingestion</b>	Do NOT induce vomiting. Get medical attention.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
<b>Self-Protection of the First Aider</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.
<b>First Aid Facilities</b>	Eyewash, safety shower and washroom.
<b>Most important symptoms and effects</b>	No information available.
<b>Notes to Physician</b>	Treat symptomatically.

## Section 5 - Fire Fighting Measures

### Suitable Extinguishing Media

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

### Extinguishing media which must not be used for safety reasons

No information available.

### Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating gases and vapors.

### Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors.

### Special protective equipment and precautions for fire fighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## Section 6 - Accidental Release Measures

### Emergency procedures

Use personal protective equipment as required. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing.

### Environmental Precautions

Should not be released into the environment. See Section 12 for additional Ecological Information.

### Methods for Containment and Clean Up

#### Clean-up methods - small spillage

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Clean with disinfectants. Do not flush down the drain. Sodium azide may react with plumbing systems to form highly explosive compounds.

#### Clean-up methods - large spillage

Not applicable, packaged goods.

### Reference to Other Sections

Refer to protective measures listed in Sections 8 and 13.

## Section 7 - Handling and Storage

### Precautions for Safe Handling

Handle as potentially infectious. Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Do not breathe mist/vapors/spray. Do not flush down the drain. Sodium azide may react with plumbing systems to form highly explosive compounds.

### Conditions for Safe Storage, Including any Incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep at temperatures between 2°C and 8 °C.

AS/NZS 2243.10:2004, Safety in laboratories - Storage of chemicals

## Section 8 - Exposure Controls and Personal Protection

### Exposure limits

**AUS** - Exposure Standards for Atmospheric Contaminants in the Occupational Environment - Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)]

Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)] updated in August, 2005. Safe Work Australia

**ACGIH** - Threshold Limit Values - Ceiling (TLV-C) guidelines by the American Conference of Governmental Industrial Hygienists (ACGIH) for controlling worker exposure to airborne chemical concentrations in the workplace.

**UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

**DE** - MAK and BAT values of Hazardous Chemical Compounds in the Work Area. Published by German Research Foundation on July 1, 2011

**NZ** - Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor

Component	Australia	New Zealand WEL	ACGIH TLV	The United Kingdom	Germany
Sodium azide	CL 0.11 ppm (0.3 mg/m <sup>3</sup> )	Ceiling: 0.11 ppm Ceiling: 0.29 mg/m <sup>3</sup>	Ceiling: 0.29 mg/m <sup>3</sup> Ceiling: 0.11 ppm	Skin TWA 0.1 mg/m <sup>3</sup> STEL 0.3 mg/m <sup>3</sup>	MAK 0.2 mg/m <sup>3</sup> (inhalable)

### Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

**Exposure Controls****Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

**Personal protective equipment****Eye Protection**

Wear safety glasses with side shields (or goggles) (Australian/New Zealand Standard AS/NZS 1337 - Eye protectors for Industrial applications)

**Hand Protection**

Protective gloves

Glove material	Breakthrough time	Glove thickness	AUS/NZ Standard	Glove comments
Disposable gloves	See manufacturers recommendations	-	AS/NZS 2161	(minimum requirement)

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection**

Long sleeved clothing

**Respiratory Protection**

Use an AS/NZS 1716 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained in line with AS/NZS 1715 on the use and maintenance of respiratory protective devices (or AUS/NZ equivalent)  
When RPE is used a face piece Fit Test should be conducted

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

No information available.

## Section 9 - Physical and Chemical Properties

**Information on basic physical and chemical properties**

<b>Appearance</b>	Clear Colorless	
<b>Physical State</b>	Liquid	
<b>Odor</b>	mild	
<b>Odor Threshold</b>	No data available	
<b>pH</b>	7.95 - 8.15 @ 20°C	
<b>Melting Point/Range</b>	No data available	
<b>Softening Point</b>	No data available	
<b>Boiling Point/Range</b>	Not applicable	
<b>Flash Point</b>	Not applicable	<b>Method -</b> No information available
<b>Evaporation Rate</b>	No data available	
<b>Flammability (solid,gas)</b>	No information available	
<b>Explosion Limits</b>	No data available	
<b>Vapor Pressure</b>	No information available	
<b>Vapor Density</b>	No data available	(Air = 1.0)
<b>Specific Gravity / Density</b>	No data available	
<b>Bulk Density</b>	No data available	
<b>Water Solubility</b>	No information available	
<b>Solubility in other solvents</b>	No information available	

**Partition Coefficient (n-octanol/water)**

<b>Component</b>	<b>log Pow</b>
HEPES	-3.85
<b>Autoignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available
<b>Viscosity</b>	No data available
<b>Explosive Properties</b>	No information available
<b>Oxidizing Properties</b>	No information available

**Other information**

## Section 10 - Stability and Reactivity

<b>Reactivity</b>	None known, based on information available
<b>Stability</b>	Stable under normal conditions.
<b>Conditions to Avoid</b>	Incompatible products, Excess heat.
<b>Incompatible Materials</b>	Strong oxidizing agents.
<b>Hazardous Decomposition Products</b>	Thermal decomposition can lead to release of irritating gases and vapors.
<b>Hazardous Polymerization</b>	No information available.

## Section 11 - Toxicological Information

**Information on Toxicological Effects**

<b>Product Information</b>	No acute toxicity information is available for this product
----------------------------	---

**(a) acute toxicity;**

<b>Oral</b>	No data available
<b>Dermal</b>	No data available
<b>Inhalation</b>	No data available

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	-	-
Proprietary ingredient	25.8 g/kg ( Rat )		
Tris (hydroxymethyl) aminomethane	LD50 = 5900 mg/kg ( Rat )	LD50 > 5000 mg/kg ( Rat )	
HEPES	LD50 > 2000 mg/kg ( Rat )	LD50 > 2000 mg/kg ( Rat )	
Sodium azide	LD50 = 27 mg/kg ( Rat )	-	LC50 0.054 - 0.52 mg/L ( Rat ) 4 h

<b>(b) skin corrosion/irritation;</b>	No data available
---------------------------------------	-------------------

<b>(c) serious eye damage/irritation;</b>	No data available
---	-------------------

**(d) respiratory or skin sensitization;**

<b>Respiratory</b>	No data available
<b>Skin</b>	No data available

<b>(e) germ cell mutagenicity;</b>	No data available
------------------------------------	-------------------

(f) carcinogenicity;	No data available There are no known carcinogenic chemicals in this product
(g) reproductive toxicity;	No data available
(h) STOT-single exposure;	No data available
(i) STOT-repeated exposure;	No data available
Target Organs	No information available.
(j) aspiration hazard;	No data available
Other Adverse Effects	The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information
Symptoms / effects, both acute and delayed	No information available

## Section 12 - Ecological Information

### Ecotoxicity effects

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
HEPES	LC50: > 100 mg/L, 96h static (Danio rerio)			
Magnesium sulfate	LC50: 2610 - 3080 mg/L, 96h static (Pimephales promelas)	EC50: 266.4 - 417.3 mg/L, 48h Static (Daphnia magna)	EC50: = 2700 mg/L, 72h (Desmodesmus subspicatus)	= 84000 mg/L EC50 Photobacterium phosphoreum 30 min
Sodium azide	LC50: = 0.7 mg/L, 96h (Lepomis macrochirus) LC50: = 0.8 mg/L, 96h (Oncorhynchus mykiss) LC50: = 5.46 mg/L, 96h flow-through (Pimephales promelas)			

Persistence and Degradability No information available  
Bioaccumulative Potential No information available

Component	log Pow	Bioconcentration factor (BCF)
HEPES	-3.85	No data available

Mobility No information available.  
Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors  
Persistent Organic Pollutant This product does not contain any known or suspected substance  
Ozone Depletion Potential This product does not contain any known or suspected substance

## Section 13 - Disposal Considerations

Waste from Residues/Unused Products Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes, including emptied containers, are controlled wastes and should be disposed of in accordance with all federal, E.P.A., state and local regulations. Assure conformity with all applicable regulations.

Contaminated Packaging Empty remaining contents. Dispose of in accordance with local regulations. Do not re-use empty containers.

Other Information Chemical wastes should be disposed through a licensed commercial waste collection

service.

## Section 14 - Transport Information

**IMDG/IMO** Not regulated

**ADG** Not regulated

Component	Hazchem Code
Sodium azide 26628-22-8 ( < 0.1% )	2XE

**IATA** Not regulated

**Environmental hazards** No hazards identified

**Special Precautions** No special precautions required

**Additional information** None known

## Section 15 - Regulatory Information

### Safety, health and environmental regulations/legislation specific for the substance or mixture

**National Regulations** Australia

See section 8 for national exposure control parameters.

### **Standard for the Uniform Scheduling of Medicines and Poisons**

Classified as a scheduled poison according to the Standard for Uniform Scheduling of Medicines and Poisons.

Component	Standard for the Uniform Scheduling of Medicines and Poisons
Tris (hydroxymethyl) aminomethane - 77-86-1	Schedule 4 listed - in preparations for injection except in preparations containing <=3% of Trometamol
Magnesium sulfate - 7487-88-9	Schedule 3 listed

### **Australian Industrial Chemicals Introduction Scheme (AICIS)**

Component	Australian Industrial Chemicals Introduction Scheme (AICIS)	Additional information
Water - 7732-18-5	Present	-
Proprietary ingredient -	Present	-
Tris (hydroxymethyl) aminomethane - 77-86-1	Present	-
HEPES - 7365-45-9	Present	-
2-Propenoic acid, 2-(phosphonoxy)-, compound with cyclohexanamine (1:1) - 10526-80-4	Present	-
beta-Nicotinamide adenine dinucleotide, disodium salt - 606-68-8	Present	-
Magnesium sulfate - 7487-88-9	Present	-
Sodium azide - 26628-22-8	Present	-
Bovine Serum Albumin - 9048-46-8	Present	-
Proprietary ingredient -	Present	-
Carboxylase, phosphopyruvate (phosphate)	Present	-

- 9067-77-0		
Dehydrogenase, malate - 9001-64-3	Present	-

**Australian - Illicit Drug Precursors/Reagents Substance List**

This product does not contain any substance(s) on the Illicit Drug Precursors/Reagents list.

**Chemicals of Security Concern**

This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern

Component	Australian - Illicit Drug Precursors/Reagents Substance List	Chemicals of Security Concern
Sodium azide - 26628-22-8		Listed in Appendix A Precursors to homemade explosives - concentration >=95%

**Legend**

**Chemicals of Security Concern** - for further information see <http://www.chemicalsecurity.gov.au/securityconcerns>

**National pollutant inventory** Not applicable

**Prohibition or notification/licensing requirements**

Shown below are details of specific prohibition/notifications or licensing requirements when they apply.

This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction.

**International Inventories**

Component	AICS	NZIoC	EINECS	ELINCS	TSCA	DSL	NDSL	PICCS	ENCS	ISHL	IECSC	KECL
Water	X	X	231-791-2	-	X	X	-	X	X		X	KE-35400
Proprietary ingredient	X	X	200-075-1	-	X	X	-	X	X	X	X	KE-17727
Tris (hydroxymethyl) aminomethane	X	X	201-064-4	-	X	X	-	X	X	X	X	KE-01403
HEPES	X	X	230-907-9	-	X	X	-	X	-		X	-
2-Propenoic acid, 2-(phosphonoxy)-, compound with cyclohexanamine (1:1)	X	X	234-084-7	-	X	X	-	-	-		-	-
beta-Nicotinamide adenine dinucleotide, disodium salt	X	X	210-123-3	-	X	X	-	-	-		-	-
Acetic acid, aminoxy-, monosodium salt	-	-	209-290-5	-	X	-	X	-	-		-	-
Magnesium sulfate	X	X	231-298-2	-	X	X	-	X	X	X	X	KE-22752
Sodium azide	X	X	247-852-1	-	X	X	-	X	X	X	X	KE-31357
Bovine Serum Albumin	X	X	232-936-2	-	X	X	-	X	-		X	KE-05-0011
Proprietary ingredient	X	X	232-602-6	-	X	-	-	X	-		X	KE-09578
Carboxylase, phosphopyruvate (phosphate)	X	-	232-958-2	-	-	-	-	-	-		-	-
Dehydrogenase, malate	X	X	232-622-5	-	X	X	-	-	-		-	KE-22770

**Legend:** X - Listed. '-' - Not Listed. XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)). **KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

**International Regulations**



**Ozone Depletion Potential** This product does not contain any known or suspected substance

**Persistent Organic Pollutant** This product does not contain any known or suspected substance

**Rotterdam Convention (PIC)** Not applicable

**Basel convention on the control of transboundary movements of hazardous wastes and their disposal**  
Not applicable.

Component	CAS No	OECD HPV	Restriction of Hazardous Substances (RoHS)	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
Water	7732-18-5	Listed	Not applicable	Not applicable	Not applicable
Proprietary ingredient	@CAS	Listed	Not applicable	Not applicable	Not applicable
Tris (hydroxymethyl) aminomethane	77-86-1	Listed	Not applicable	Not applicable	Not applicable
HEPES	7365-45-9	Not applicable	Not applicable	Not applicable	Not applicable
2-Propenoic acid, 2-(phosphonoxy)-, compound with cyclohexanamine (1:1)	10526-80-4	Not applicable	Not applicable	Not applicable	Not applicable
beta-Nicotinamide adenine dinucleotide, disodium salt	606-68-8	Not applicable	Not applicable	Not applicable	Not applicable
Acetic acid, aminooxo-, monosodium salt	565-73-1	Not applicable	Not applicable	Not applicable	Not applicable
Magnesium sulfate	7487-88-9	Listed	Not applicable	Not applicable	Not applicable
Sodium azide	26628-22-8	Not applicable	Not applicable	Not applicable	Not applicable
Bovine Serum Albumin	9048-46-8	Not applicable	Not applicable	Not applicable	Not applicable
Proprietary ingredient	@CAS	Not applicable	Not applicable	Not applicable	Not applicable
Carboxylase, phosphopyruvate (phosphate)	9067-77-0	Not applicable	Not applicable	Not applicable	Not applicable
Dehydrogenase, malate	9001-64-3	Not applicable	Not applicable	Not applicable	Not applicable

**Authorisation/Restrictions according to EU REACH** Not applicable

## Section 16 - Other Information

### Legend

**AICS** - Australian Inventory of Chemical Substances  
**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**IECSC** - Chinese Inventory of Existing Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**TWA** - Time Weighted Average  
**IARC** - International Agency for Research on Cancer  
**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association  
**MARPOL** - International Convention for the Prevention of Pollution from Ships  
**NZS 5433:2020** - Transport of Dangerous Goods on Land  
**LD50** - Lethal Dose 50%

**NZIoC** - New Zealand Inventory of Chemicals  
**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances  
**ENCS** - Japanese Existing and New Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**CAS** - Chemical Abstracts Service  
**ACGIH** - American Conference of Governmental Industrial Hygienists Predicted No Effect Concentration (PNEC)  
**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code  
**ADG** - Australian Code for the Transport of Dangerous Goods by Road and Rail  
**OECD** - Organisation for Economic Co-operation and Development  
**LC50** - Lethal Concentration 50%

**EC50** - Effective Concentration 50%  
**WEL** - Workplace Exposure Limit  
**DNEL** - Derived No Effect Level  
**POW** - Partition coefficient Octanol:Water  
**vPvB** - very Persistent, very Bioaccumulative  
**VOC** - (Volatile Organic Compound)

**ATE** - Acute Toxicity Estimate  
**RPE** - Respiratory Protective Equipment  
**NOEC** - No Observed Effect Concentration  
**BCF** - Bioconcentration factor  
**PBT** - Persistent, Bioaccumulative, Toxic

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>  
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

**Revision Date** 14-Jul-2023  
**Revision Summary** Update to GHS format.

**This Safety Data Sheet (SDS) is prepared in accordance to and complies with the requirements of Safe Work Australia - Work Health and Safety Regulations (WHS Regulations).**

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**