



# Teco Diagnostics

Clinical Reagent Specialists

Form	QL801-139
Revision	A
Prepared by	Brian Anderson
Approved by	Owen Bry
Issue date	1/14/2011

[MSDS]

## Carbon Dioxide

1268 N. Lakeview Ave. Anaheim, CA 92807 Phone: (714) 463-1111 Fax: (714) 463-1169 www.tecodiag.com

### Section 1 – Product and Company Information

<b>Product Name</b>	<b>Carbon Dioxide</b>	<b>Emergency Telephone No.</b>
<b>Catalog Number</b>	C525-60	CHEMTREC (800) 424-9300
<b>Product Type</b>	Clinical Chemistry Reagent	International CHEMTREC (703) 527-3887
<b>Company Name</b>	Teco Diagnostics	<b>Company Telephone No.</b>
<b>Street Address</b>	1268 N. Lakeview Avenue	(800) 222-9880 or (714) 693-7788 Monday - Friday 8:00-4:30 PST
<b>City, State, Zip Code, Country</b>	Anaheim, CA 92807 USA	Fax No. (714) 693-3838

### Section 2 – Composition/Information on Ingredients

	<b>Chemical Names</b>	<b>Concentration</b>	<b>CAS#</b>
Carbon Dioxide Reagent:	PEP	1.8 MM	4265-07-0
	Magnesium Sulfate	10 mM	7487-88-9
	NADH	0.4 mM	58-68-4
	MDH (procine)	1.25 KU/L	9001-64-3
	Sodium oxamate	2.5 mM	565-73-1
	Sodium azide	0.1%	26628-22-8
Carbon Dioxide Standard:	Sodium bicarbonate	30 mM	144-55-8

Other components either non-hazardous or at concentrations below that requiring hazardous listing.

### Section 3 – Hazards Identification

#### Emergency Overview:

Note: The following information applies to the component materials at higher concentrations than present in the reagent. Although lower concentrations are present in the reagent, appropriate safety precautions should still be taken.

PEP, Sodium oxamate & Sodium bicarbonate:	There is at present no information or indication of hazardous properties. The usual precautions taken when handling chemicals should be observed.
Magnesium Sulfate:	Caution: Avoid contact and inhalation. Target organ(s): central nervous system, G.I. System
NADH:	Slightly hazardous to water and ground. There is at present no information or indication of hazardous properties. The usual precautions taken when handling chemicals should be observed.
MDH:	Skin contact may cause an irritation. Repeated inhalation of enzyme dust may induce sensitization and may cause allergic type reactions in sensitized individuals.
Sodium azide:	Highly Toxic (USA). Very Toxic (EU). Toxic if inhaled, if ingested, or in contact with skin. Contact with acid liberates very toxic gas. Possible explosive hazard. May react with lead and copper plumbing to form highly explosive metal azides. Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment. Target organs: Nerves, Heart.

	<b>HMS Rating</b>			<b>NFPA Rating</b>		
	<b>Health</b>	<b>Flammability</b>	<b>Reactivity</b>	<b>Health</b>	<b>Flammability</b>	<b>Reactivity</b>
Magnesium Sulfate:	1*	0	1	1	0	1
Sodium azide:	4*	0	2	4	0	2
	*additional chronic hazards present					

For additional information on toxicity, please refer to section 11. For information on ecological effects, please refer to section 12.

### Section 4 – First Aid Measures

#### Oral Exposure

If swallowed, wash out mouth with large amounts of water provided person is conscious. Call a physician if necessary.

#### Inhalation Exposure

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

#### Skin Exposure

In case of skin contact, immediately wash skin with soap and copious amounts of water. Remove and wash contaminated clothing and shoes.

#### Eye Exposure

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers.

### Section 5- Fire and Explosive Hazard Data

<b>Autoignition Temp</b>	<b>Extinguishing Media</b>
N/A	Water spray. Carbon dioxide, dry chemical powder or appropriate foam.
<b>Explosion Hazards</b>	
This reagent contains sodium azide which may react with lead or copper plumbing to form potentially explosive metal azides.	
<b>Firefighting Measures</b>	
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.	
Unusual Fire & Explosion Hazards: Emits toxic fumes under fire conditions.	



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**Section 6 – Accidental Release Measures**

**Procedure to be Followed in Case of Leak or Spill**

Ventilate the area. Absorb on inert material. Place material and contaminated disposables into a suitable container, seal, label and hold for disposal. Wash spill site after material pickup is complete.

**Procedures of Personal Precaution**

Wear chemical safety goggles, rubber boots and heavy rubber gloves. Exercise appropriate precautions to minimize direct contact with skin or eyes.

**Methods for Cleaning Up and Disposal**

Waste Disposal Method: Dispose of in accordance with federal, state, and local regulations.

**Section 7 – Handling and Storage**

**Handling**

Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Avoid inhalation or ingestion. Do not pipette by mouth. Refer to Section 8

**Storage**

Keep tightly closed. Store according to package directions.

**Section 8 – Exposure Controls / PPE**

**Personal Protective Equipment**

Respiratory Protection: None required where adequate ventilation is satisfactory.  
Ventilation: General room ventilation is satisfactory.  
Protective Gloves: Compatible chemical-resistant gloves.  
Eye Protection: Chemical safety glasses or goggles  
Other Protective Equipment: Use a safety pipette device. Lab coat recommended.

**Engineering Controls**

Safety shower and eyewash. Good general ventilation.

**General Hygiene Measures**

Wash thoroughly after handling. Wash contaminated clothing before reuse.

**Exposure Limits: Sodium azide**

Country	Type	Value
Poland	NDS	0.1 mg/m <sup>3</sup>
Poland	NDSch	0.3 mg/m <sup>3</sup>
Poland	NDSP	--

**Exposure Limits, RTECS (RTECS# VY8050000): Sodium azide**

Country	Source	Type	Value	Remarks
USA	ACGIH	Ceiling concentration	0.29 mg/m <sup>3</sup>	--
USA	NIOSH	Ceiling concentration	0.1 ppm (SK)	--
New Zealand	OEL	--	--	Check ACGIH TLV

**Section 9 - Physical Data**

<b>Boiling Point</b> N/A	<b>Solubility in Water</b> Soluble	<b>Specific Gravity (g/cm<sup>3</sup>)</b> N/A
<b>Melting Point</b> N/A	<b>Odor</b> No significant odor.	<b>Appearance</b> Reagent: White powder Standard: Clear liquid

**Section 10 – Stability and Reactivity**

<b>Stability</b> Stable, under normal handling and storage conditions.	<b>Materials to Avoid</b> Strong oxidizing agents, halogenated solvents, metals, acids, acid chlorides.
<b>Hazardous Decomposition Products</b> Magnesium Sulfate → sulfur oxide, magnesium oxide NADH → phosphorus oxides, nitrogen oxides Sodium oxamate → carbon monoxide, carbon dioxide, nitrogen oxides Sodium azide → nitrogen oxides, hydrazoic acid Sodium bicarbonate → carbon monoxide, carbon dioxide	<b>Hazardous Polymerization</b> Will not occur.

**Section 11 – Toxicological information**

<b>Route of Exposure</b> Skin Contact: May cause skin irritation. Skin Absorption: May be harmful if absorbed through the skin. Eye Contact: May cause eye irritation. Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract. Ingestion: May be harmful if swallowed.	<b>Signs and Symptoms of Exposure</b> To the best of our knowledge, the chemical, physical and toxicological properties of have not been thoroughly investigated.
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**Section 11 – Toxicological information (continued)**

**Toxicity Data: Magnesium Sulfate**

Species:	Dose:	Route of Application:	Result:	Remarks
Woman	80 mg/kg	Intravenous	LDLO	Cardiac: other changes. Lungs, Thorax or Respiration: Cyanosis
Rat	1200 mg/kg	Subcutaneous	LD50	--
Mouse	1029 mg/kg	Intraperitoneal	LD50	--
Mouse	645 mg/kg	Subcutaneous	LD50	--

Note: Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information. (RTECS#: OM4500000)

**Chronic Exposure – Teratogen: Magnesium Sulfate**

Species:	Dose:	Route of Application:	Exposure Time	Result
Rat	750 mg/kg	Intraperitoneal	17-21D PREG	Effects on embryo or fetus: Other effects to embryo. Specific Developmental Abnormalities: Hepatobiliary system.

**Chronic Exposure – Reproductive Hazard: Magnesium Sulfate**

Species:	Dose:	Route of Application:	Exposure Time	Result
Woman	320 mg/kg	Intravenous	39W PREG	Maternal effects: Other effects. Effects on embryo or fetus: Other effects to embryo.
Rat	9 gm/kg	Subcutaneous	15-20 D PREG	Maternal effects: Other effects.
Rat	18 gm/kg	Subcutaneous	15-20 D PREG	Effects on newborn: growth statistics (e.g. reduced weight gain) Effects on newborn: physical.

**Toxicity Data: Sodium azide**

Species:	Dose:	Route of Application:	Result:	Remarks (refer to Remark # below)
Woman	786 mg/kg	Oral	LDLO	1, 2, 6
Man	29 mg/kg	Oral	LDLO	7, 10, 11
Man	129 mg/kg	Oral	LDLO	2, 7, 9
Woman	14 mg/kg	Oral	LDLO	1, 6, 8
Man	143 mg/kg	Oral	LDLO	3, 4, 16
Rat	27 mg/kg	Oral	LD50	--
Rat	37 mg/m3	Inhalation	LC50	1, 12, 17
Rat	50 mg/kg	Skin	LD50	--
Rat	45100 ug/kg	Subcutaneous	LD50	14, 15
Rat	47500 ug/kg	Intratracheal	LD50	14, 15
Mouse	27 mg/kg	Oral	LD50	--
Mouse	32.4 mg/m3	Inhalation	LC50	1, 12, 17
Mouse	28 mg/kg	Intraperitoneal	LD50	1, 5, 13
Mouse	23060 ug/kg	Subcutaneous	LD50	14, 15
Mouse	19 mg/kg	Intravenous	LD50	--
Rabbit	20 mg/kg	Skin	LD50	--
Bird (wild)	23.7 mg/kg	Oral	LD50	--

Note: Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information. (RTECS#: VY8050000)

**Other/Organ Effects: Sodium azide (See Toxicity Data section above)**

Remark #	Remarks	Remark #	Remarks
1	Behavioral: convulsions or effect on seizure threshold.	10	Brain and coverings: Increased intracranial pressure.
2	Behavioral: coma.	11	Lungs, Thorax or Respiration: acute pulmonary edema.
3	Behavioral: somnolence (general depressed activity).	12	Lungs, Thorax or Respiration: structural or functional change in trachea or bronchi.
4	Behavioral: irritability.	13	Lungs, Thorax or Respiration: respiratory stimulation.
5	Behavioral: change in motor activity (specific assay).	14	Lungs, Thorax or Respiration: other changes.
6	Cardiac: arrhythmias (including changes in conduction).	15	Peripheral Nerve and Sensation: spastic paralysis with or without sensory change.
7	Cardiac: pulse rate.	16	Sense Organs and Special Senses (nose, eye, ear, and taste): Eye: mydriasis (pupillary dilation).
8	Cardiac: change in force of contraction.	17	Sense Organs & Special Senses (nose, eye, ear, and taste): Other.
9	Cardiac: other changes.		



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**Section 11 – Toxicological information (continued)**

**Irritation Data: Sodium Bicarbonate**

Species:	Dose:	Route of Application:	Result:
Human	30 mg / 3 D	Skin	Mild irritation
Rabbit	100 mg / 30S	Eye	Mild irritation

**Toxicity Data: Sodium Bicarbonate**

Species:	Dose:	Route of Application:	Result:
Rat	4220 mg/kg	Oral	LD50
Mouse	3360 mg/kg	Oral	LD50

Note: Only selected Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here.  
See actual entry in RTECS for complete information. (RTECS#: VZ0950000)

**Section 12 – Ecological Information**

**Acute Ecotoxicology Tests: Sodium azide:**

Test Type	Species	Time	Value
EC50 Daphnia	Daphnia pulex	48.0 h	4.2 mg/l
LC50 Fish	Pimephales promelas (Fathead minnow)	96.0 h	5.46 mg/l
LC50 Fish	Onchorhynchus mykiss (Rainbow trout)	96.0 h	3.92 mg/l

**Section 13 - Disposal Considerations**

Contact a licensed professional waste disposal service to dispose of this material.  
Observe all federal, state, and local environmental regulations.

**Section 14 – Transport Information**

<b>DOT:</b> Proper shipping name: None. Non-hazardous for Transport: This substance is considered to be non-hazardous for transport.	<b>IATA:</b> Non-hazardous for Air Transport.
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**Section 15 – Regulatory Information**

<b>Magnesium sulfate:</b> <b>EU Additional Classification</b> Safety Statements: S 22 24/25 Do not breathe dust. Avoid contact with skin and eyes.	<b>Magnesium sulfate:</b> <b>US Classification and Label Text</b> Caution: Avoid contact and inhalation. Target organ(s): CNS, GI system
<b>Canada Regulatory Information</b> WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.	<b>US Regulatory Information</b> SARA Listed: No TSCA Inventory Item: Yes

**NADH & Sodium oxamate:**  
Data not available

**MDH:**

**EU Additional Classification**  
Symbol of Danger: Xn (Harmful)  
Risk Statement: R 42 May cause sensitization by inhalation.  
Safety Statements: S 22/23 Do not breathe dust/ spray.



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**Section 15 – Regulatory Information (Continued)**

<p><b>Sodium azide:</b></p> <p><b>EU Additional Classification</b> Symbol of Danger: T+ N Indication of Danger: Very toxic. Dangerous for the environment. Risk Statements: R 28 32 50/53 Very Toxic if swallowed. Contact with acids liberates very toxic gas. Very Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment. Safety Statements: S 28 45 61 After contact with skin, wash immediately with plenty of soap-suds. In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). Avoid release to the environment. Refer to special instructions safety data sheet</p> <p><b>Canada Regulatory Information</b> WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR. DSL: Yes, NDSL: No</p>	<p><b>Sodium azide:</b></p> <p><b>US Classification and Label Text</b> Indication of Danger: Highly Toxic (USA). Very Toxic (EU). Risk Statements: Heating may cause and explosion. Very toxic by inhalation, in contact with skin and if swallowed. Contact with acids liberates very toxic gas. Very Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment. Safety Statements: In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). Wear suitable protective clothing, gloves and eye/face protection. Do not breathe dust. <b>US Statements</b> Readily absorbed through skin. May react with lead and copper plumbing to form highly explosive metal azides. Target Organs: Nerves, Heart</p> <p><b>US Regulatory Information</b> SARA Listed: Yes Derminimis: 1.0% Notes: Subject to SARA section 313 reporting requirements.</p>
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<p><b>Sodium Bicarbonate:</b></p> <p><b>European Information</b> Risk and Safety Statements: N/A</p> <p><b>Canada Regulatory Information</b> WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.</p>	<p><b>Sodium Bicarbonate:</b></p> <p><b>US Regulatory Information</b> SARA Listed: No, TSCA Inventory Item: Yes</p>
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**Section 16 - Other Information**

<p>This Product is labeled in accordance with CFR21 (Food and Drugs), Section 809.10.</p> <p>The information contained herein has been compiled from data presented in various technical sources believed to be accurate. We make no warranties, express or implied, and assume no liability in connection with the use of this information. It is the user's responsibility to determine the suitability of this information and to assure the adoption of necessary safety precautions.</p>
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N/A - Not Applicable or Not Available