

Material Safety Data Sheets

1) Product and company identification:

Product : In Vitro Reagents **Product Code :** 4NAE3, 4NAE12

Company : GENERAL BIOLOGICALS CORP.

Address of the company :

#6, INNOVATION FIRST ROAD, SCIENCE PARK, 30077 HSIN CHU, TAIWAN, R.O.C.

Telephone Number for emergency of the company : 886-3-5779221-254

Fax number of the company : 886-3-5779227

E mail of the company : SALE.GROUP@gbc.com.tw

2) Composition/information on ingredients :

2.1) Chemical Characterization : preparation

2.2) Description : Kit of components listed below with non-hazardous additions.

#	Components	Physical appearance	96 tests 4NAE3	480 tests 4NAE12
1	HCV Antigens Plate	Solidin aluminum foil	1 plates	5 plates
2	Conc. HCV Antigen·HRPO Conjugate	Liquid in plastic bottle	1 bottle, 2.5 mL	1 bottle, 5 mL
3	Conjugate Diluent	Liquid in plastic bottle	1 bottle, 24 mL	1 bottle, 100 mL
4	Anti-HCV Positive Control	Liquid in plastic bottle	1 bottle, 1.5 mL	1 bottle, 5 mL
5	HC Negative Control	Liquid in plastic bottle	1 bottle, 1.5 mL	1 bottle, 5 mL
6	2N Sulfuric Acid	Liquid in plastic bottle	1 bottle, 12 mL	1 bottle, 35 mL
7	Washing Solution D (20X) Concentrate	Liquid in plastic bottle	1 bottle, 110 mL	1 bottle, 400 mL
8	TMB Substrate Solution A	Liquid in plastic bottle	1 bottle, 12 mL	1 bottle, 35 mL
9	TMB Substrate Solution B	Liquid in plastic bottle	1 bottle, 12 mL	1 bottle, 35 mL

2.3) Dangerous Components :




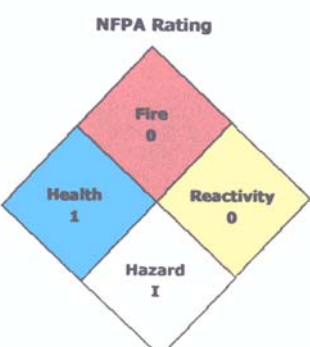
Component	CAS No.	Ingredient	Content	S phrases	R phrases
Conc. HCV Antigen-HRP O Conjugate	Not found	Human/Animal sourced Preparation	20 %	Not found	Not found
	77-86-1	PB buffer	<2%	26-36	36/37/38
	Not found	Horse-Radish Peroxidase	Trace	Not found	Not found
	26628-22-8	Sodium azide	0.005 %	53-28-45-60-61	28-32-50/53
Conjugate Diluent	Not found	Human/Animal sourced Preparation	20%	Not found	Not found
	77-86-1	PB buffer	<2%	26-36	36/37/38
	26628-22-8	Sodium azide	0.005 %	53-28-45-60-61	28-32-50/53
Anti-HCV Positive Control	Not found	Human/Animal sourced Preparation	100 %	Not found	Not found
	26628-22-8	Sodium azide	0.1 %	53-28-45-60-61	28-32-50/53
HC Negative Control	Not found	Human/Animal sourced Preparation	100 %	Not found	Not found
	26628-22-8	Sodium azide	0.1%	53-28-45-60-61	28-32-50/53
2N Sulfuric Acid	7664-93-9	Sulfuric Acid	< 6 v/v %	26-30-45	35
TMB Substrate Solution A	54827-17-7	3,3',5,5'-tetramethyl Benzidine.	< 0.04 %	26-22-36	20/21/22-36/37/38-40
	68-12-2	N,N-dimethyl formamide	0.2 v/v %	Not found	1, 6, 26, 38, 84-94, 100, 116, 118, 119, 122
	67-56-1	Methanol	5 v/v %	7-16-24-45	11-23/25
	7775-14-6	Sodium bisulfite	< 0.01 %	Not found	1, 2, 4-7, 10, 12, 47, 49, 59, 63, 73, 82, 87-94, CK
	7664-93-9	Sulfuric Acid	0.01 %	26-30-45	35
TMB Substrate Solution B	7124-43-6	Urea-Hydrogen Peroxide	< 0.05 %	17-27-26-36/37/39	8-34
	1405-41-0	Gentamycin	0.06 %	45-36/37/39-22	61-36/38-42/43





2.4) Additional Information






The component 1 to 5 contain materials of human or animal origin which has been inactivated at 60°C for 10 hour. Since no test method offers complete assurance that infectious agents are absent, these components should be handled as potential infectious.


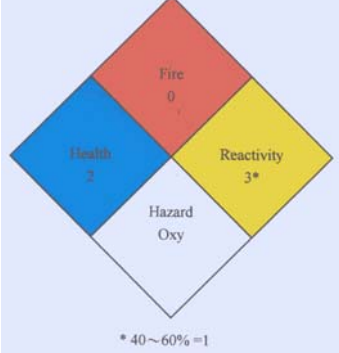
3) Hazards Identification :



3.1) Hazard description :

Ingredient	Classification & Symbol	Routes of Entry	Health Hazards	Environmental Hazards	Fire/explosive Hazards
Human/ Animal Sourced Preparation Potential Biohazard		1. Inhalation 2. Skin contact 3. Eye contact 4. Ingestion	Potential biohazard	Potential biohazard, should be autoclaved before disposal.	No
					
Horse-radish peroxidase Solution	Irritation 	1. Skin contact 2. Eye contact 3. Ingestion	a. There is at present no information or indication of hazardous property. b. May cause irritation. c. May cause allergic reaction to a small percentage of the population who exhibit an allergic reaction to enzymes.	No (concentration is very low)	No (Aqueous solution)
NFPA Rating 					

Ingredient	Classification & Symbol	Routes of Entry	Health Hazards	Environmental Hazards	Fire/explosive Hazards
Sodium Azide	Harmful  Harmful or Irritant	1. Skin contact 2. Eye contact 3. Ingestion 4. Inhalation	1. May be harmful through skin contact. 2. May be harmful through eyes contact. 3. Harmful by ingestion, ORL Fish LC _{50/96} Hrs: 1mg/l.	Airborne Exposure Limits: NIOSH recommended Exposure Limit (REL): 0.3mg/M ³ . Ventilation System: below Airborne Exposure Limits.	No (Aqueous solution)
					
3,3'5,5'-Benzidine Solution	Harmful or irritation  Harmful or Irritant	1. Skin contact 2. Eye contact 3. Ingestion	Harmful, irritation, should be handled as a potential carcinogen.	No (concentration <0.1 %)	No (Aqueous solution containing dimethyl sulfoxide and methyl alcohol)
					

Ingredient	Classification & Symbol	Routes of Entry	Health Hazards	Environmental Hazards	Fire/explosive Hazards
NN-dimethyl formamide	 <p>Harmful or Irritant</p> 	<ol style="list-style-type: none"> Inhalation Skin contact Eye contact Ingestion 	<ol style="list-style-type: none"> Irritation, nausea, vomiting, headache, dizziness. Irritation, allergic reactions, blisters, rash, itching, nausea, vomiting, diarrhea, chest pain, headache, drowsiness, blood disorders. Irritation, blurred vision Nausea, vomiting, diarrhea, stomach pain, drowsiness. 	No (concentration <0.2 v/v%)	No (Aqueous solution)
Methanol Aqueous Solution	<p>Irritation</p>  <p>Harmful or Irritant</p> <p>Toxic</p>  <p>Toxic or Very Toxic</p> 	<ol style="list-style-type: none"> Inhalation Skin contact Eye contact Ingestion 	<ol style="list-style-type: none"> Cause irritation to respiratory tract. Affects central nervous system, especially optic nerve. Cause dizziness, nauseam muscle weakness, narcosis, respiratory failure. Cause irritation to skin. Cause irritation to eyes. Harmful if digested. Affects central nervous system, especially optic nerve. Cause dizziness, nauseam muscle weakness, narcosis, respiratory failure. Can produce blindness (100 ml can be total). 	No (Concentration <45 v/v %)	No (Aqueous solution)

Ingredient	Classification & Symbol	Routes of Entry	Health Hazards	Environmental Hazards	Fire/explosive Hazards
Urea • Hydrogen peroxide Aqueous Solution (< 0.1%)		1. Skin contact 2. Eye contact 3. Ingestion 4. Inhalation	1. Harmful through skin contact. 2. Harmful through eyes contact. 3. Harmful by ingestion, 4. Harmful by inhalation	No (concentration < 0.1%)	No (Aqueous solution)
					

Ingredient	Classification & Symbol	Routes of Entry	Health Hazards	Environmental Hazards	Fire/explosive Hazards
Dilute Sulfuric Acid Aqueous Solution (<6 v/v %) Corrosive		<ol style="list-style-type: none"> 1. Inhalation 2. Skin contact 3. Eye contact 4. Ingestion 5. Cancer hazard. 	<p>1. May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. May cause chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema. Aspiration may lead to pulmonary edema. May cause systemic effects.</p> <p>2. Causes skin burns. Continued contact can cause tissue necrosis. May cause skin rash, and cold and clammy skin with cyanosis or pale color.</p> <p>3. Cause eye burns. May cause chemical conjunctivitis and corneal damage.</p> <p>4. May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause systemic toxicity with acidosis. May cause perforation of the digestive tract.</p> <p>5. Mutation.</p>	No (concentration <6 v/v %)	No (Aqueous solution)
					

3.2) Classification System :

The classification is according to GLOBALLY HARMONISED SYSTEM FOR THE CLASSIFICATION AND LABELLING OF CHEMICALS (May 2001) and NFPA hazard labels.

4) First-aid Measures :

General Information	No special measures required.
Inhalation	Supply fresh air. Seek medical advice in case of complaints.
Ingestion	Rinse mouth thoroughly with water. Seek medical advice in case of complaints.
Contact with eyes	Wash with copious amounts of water. Seek medical advice in case of complaints.
Contact with skin	Wash thoroughly with water. Seek medical advice in case of complaints.
Protection of First-aiders	Wearing of protective gloves and avoiding the generation of aerosols.

5) Fire Fighting Measures :

Suitable extinguishing agents : CO₂, powder or water spray.

Fight larger fires with water spray or alcohol resistant foam.

Special Protective Equipment : No special measures required.

Specific Hazards :

Components	Specific Hazards
1. HCV Antigens Plate	CO.
2. Conc. HCV Antigen·HRPO Conjugate	CO, NO _x , SO _x , Hg.
3. Conjugate Diluent	CO, NO _x , SO _x .
4. Anti-HCV Positive Control	CO, NO _x , SO _x , N ₂ .
5. HC Negative Control	CO, NO _x , SO ₂ , N ₂ .
6. 2N Sulfuric Acid	SO _x .
7. Washing Solution D (20X)	CO.
8. TMB Substrate Solution A	CO, NO _x , SO _x .
9. TMB Substrate Solution B	CO.

6) Accidental Release Measures:

Personal Precautions : Wear protective gloves and avoid the generation of aerosols.

Keep unprotected persons away.

Ensure adequate ventilation.

Environmental Precautions : Treated (inactivated) as biological hazardous contamination.

Methods for Cleaning Up :

Components	Methods for Cleaning Up
1. HCV Antigens Plate	Inactivated with Sodium Hypochlorite Solution prior to clean with plenty of water.
2. Conc. HCV Antigen-HRPO Conjugate	
3. Conjugate Diluent	
4. Anti-HCV Positive Control	
5. HC Negative Control	
6. 2N Sulfuric Acid	Clean with plenty of water.
7. Washing Solution D (20X)	
8. TMB Substrate Solution A	
9. TMB Substrate Solution B	

7) Handling and Storage :

7.1) Handling :

Technical Measures : No special measures required.

Precautions : Handled as biohazards.

Wear protective gloves and avoid the generation of aerosols.

Keep TMB Solution A away from fire sources.

Specific Safe Handling Advice: No special measures required.

7.2) Storage :

Technical Measures : No special measures required.

Storage conditions : Store in 2 ~ 8 °C.

Incompatible products : No special measures required.

Packaging Materials : No special measures required.

8) Exposure Control/Personal Protection:

8.1) Engineering Measures :

Additional Information about design of technical facilities : No, see item 7).

8.2) Specific Control Parameters:

Ingredients with limit values that require monitoring at the workplace : No.

Additional Information : No special measures required.

8.3) Personal Protective equipment:

Respiratory Protection : No special measures required.

Hand Protection : Wear protective gloves.

Eye Protection : No special measures required.

Skin and Body Protection : Wear protective gown.

8.4) Hygiene Measures : Handled as biohazards.

9) Physical and chemical Properties :

9.1) Physical Properties:

Component	Form	Color	Odor	m.p.	b.p.	Flash Point	Self-ignition
1. HCV Antigens Plate	solid	colorless	odorless	N/A	N/A	N/A	N/A
2. Conc. HCV Antigen-HRPO Conjugate	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
3. Conjugate Diluent	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
4. Anti-HCV Positive Control	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
5. HC Negative Control	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
6. 2N Sulfuric Acid	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
7. Washing Solution D (20X)	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
8. TMB Substrate Solution A	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined
9. TMB Substrate Solution B	Liquid	Nearly colorless	Nearly odorless	Not determined	Not determined	Not determined	Not determined

9.2) Chemical Properties:

Component	Danger of explosion	Density	Solubility in water	Organic Solvents Content	Water content
1. HCV Antigens Plate	No	N/A	N/A	0	0
2. Conc. HCV Antigen·HRPO Conjugate	No	Not determined	Miscible	0	Aqueous Solution
3. Conjugate Diluent	No	Not determined	Miscible	0	Aqueous Solution
4. Anti-HCV Positive Control	No	Not determined	Miscible	0	Aqueous Solution
5. HC Negative Control	No	Not determined	Miscible	0	Aqueous Solution
6. 2N Sulfuric Acid	No	Not determined	Miscible	0	Aqueous Solution
7. Washing Solution D (20X)	No	Not determined	Miscible	0	Aqueous Solution
8. TMB Substrate Solution A	No	Not determined	Miscible	< 5%	Aqueous Solution
9. TMB Substrate Solution B	No	Not determined	Miscible	0	Aqueous Solution

10) Stability and Reactivity:

10.1) Thermal decomposition/Conditions to be avoided:

Decomposition will not occur if used and stored according to the package insert.

10.2) Materials to be avoided:

Please use the kit in accordance with the package insert.

10.3) Dangerous Reactions:

No dangerous reactions known.

10.4) Dangerous decomposition products:

Components	Specific Hazards
1. HCV Antigens Plate	CO.
2. Conc. HCV Antigen·HRPO Conjugate	CO, NO _x , SO _x , Hg.
3. Conjugate Diluent	CO, NO _x , SO _x .
4. Anti-HCV Positive Control	CO, NO _x , SO _x , N ₂ .
5. HC Negative Control	CO, NO _x , SO ₂ , N ₂ .
6. 2N Sulfuric Acid	SO _x .
7. Washing Solution D (20X)	CO.
8. TMB Substrate Solution A	CO, NO _x , SO _x .
9. TMB Substrate Solution B	CO.

11) Toxicological Information :

11.1) Acute Toxicity :

Acute toxicity will not occur if used and stored according to the package insert.

11.2) Local Effects :

Components	Local Effects
1. HCV Antigens Plate	No.
2. Conc. HCV Antigen-HRPO Conjugate	May cause irritation to skin, mucous membranes and eyes.
3. Conjugate Diluent	May cause irritation to skin, mucous membranes and eyes.
4. Anti-HCV Positive Control	May cause irritation to skin, mucous membranes and eyes.
5. HC Negative Control	May cause irritation to skin, mucous membranes and eyes.
6. 2N Sulfuric Acid	May cause irritation to skin, mucous membranes, eyes and respiratory tract. May cause chemical burns to the respiratory tract.
7. Washing Solution D (20X)	No.
8. TMB Substrate Solution A	May cause irritation to skin, mucous membranes and eyes.
9. TMB Substrate Solution B	May cause irritation to skin, mucous membranes and eyes.

11.3) Sensitization :

Components	Sensitization
1. HCV Antigens Plate	No.
2. Conc. HCV Antigen-HRPO Conjugate	May cause sensitization to mucous membranes and eyes.
3. Conjugate Diluent	May cause irritation to skin, mucous membranes and eyes.
4. Anti-HCV Positive Control	May cause irritation to skin, mucous membranes and eyes.
5. HC Negative Control	May cause irritation to skin, mucous membranes and eyes.
6. 2N Sulfuric Acid	No.
7. Washing Solution D (20X)	No.
8. TMB Substrate Solution A	May cause irritation to mucous membranes and eyes.
9. TMB Substrate Solution B	No.

11.4) Chronic Toxicity or Long Term Toxicity:

Components	Chronic Toxicity or Long Term Toxicity
1. HCV Antigens Plate	No.
2. Conc. HCV Antigen·HRPO Conjugate	May cause systemic poison.
3. Conjugate Diluent	May cause systemic poison.
4. Anti-HCV Positive Control	May cause systemic poison.
5. HC Negative Control	May cause systemic poison.
6. 2N Sulfuric Acid	May cause systemic toxicity with acidosis.
7. Washing Solution D (20X)	No.
8. TMB Substrate Solution A	May affects central nervous system.
9. TMB Substrate Solution B	No.

11.5) Carcinogenicity/Mutagenicity:

Components	Carcinogenicity/Mutagenicity
1. HCV Antigens Plate	Not a carcinogen/mutagen.
2. Conc. HCV Antigen·HRPO Conjugate	Not a carcinogen/mutagen.
3. Conjugate Diluent	Not a carcinogen/mutagen.
4. Anti-HCV Positive Control	Not a carcinogen/mutagen.
5. HC Negative Control	Not a carcinogen/mutagen.
6. 2N Sulfuric Acid	IARC Category 1
7. Washing Solution D (20X)	Not a carcinogen/mutagen.
8. TMB Substrate Solution A	May be a carcinogen/mutagen.
9. TMB Substrate Solution B	Not a carcinogen/mutagen.

11.6) Additional Toxicological Information:

Not found.

12) Ecological Information (Possible environmental Effects behavior and fate):

2N Sulfuric Acid : Water hazard class 2: hazardous for water.

Other liquid components : Water hazard class 1: slightly hazardous for water.

Do not allow undiluted liquid components or large quantities of the liquid components to reach ground water, water course or sewage system.

13) Disposal Considerations:

Components	Recommended Disposal Methods for components/contaminated components/used components.
1. HCV Antigens Plate	Treated as potential infectious materials before disposal.
2. Conc. HCV Antigen·HRPO Conjugate	Treated as potential infectious materials before disposal.
3. Conjugate Diluent	Treated as potential infectious materials before disposal.
4. Anti-HCV Positive Control	Treated as potential infectious materials before disposal.
5. HC Negative Control	Treated as potential infectious materials before disposal.
6. 2N Sulfuric Acid	Neutralized with base and/or diluted with large quantities of water.
7. Washing Solution D (20X)	Diluted with large quantities of water.
8. TMB Substrate Solution A	No special measures required.
9. TMB Substrate Solution B	No special measures required.
Specimens	Treated as potential infectious materials before disposal.

14) Transport Information

14.1) Land Transport ADR/RID :

2N Sulfuric Acid : ADR/RID Class: 8 Corrosive Substances
UN Number : UN2796
Packaging Group : II
Shipping Name : Corrosive liquid, acidic, inorganic, n.o.s., sulfuric acid.
Other components : ADR/RID Class: None

14.2) Maritime Transport IMDG :

2N Sulfuric Acid : IMDG Class : 8
UN Number : UN2796
Packaging Group : II
Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s., sulfuric acid.
Other components : IMDG Class : None

14.3) Air Transport ICAO-Ti and IATA_DGR :

2N Sulfuric Acid : ICAO/IATA Class : 8
UN Number : UN2796
Packaging Group : II
Shipping Name : Corrosive liquid, acidic, inorganic, n.o.s., sulfuric acid.
Other components : ICAO/IATA Class : None

15) Regulations:

15.1) Product Related Hazard Information:

Observe the general safety regulations when handling the kit, its components and specimens.

15.2) Labeling according to EU guidelines/NFPA chemical Hazard Labels:

The kit including its components will be classified and marked in accordance with EU Directives/NFPA Chemical Hazard Labels.

15.3) Information about limitation of use:

The kit and its components are for in vitro diagnosis use and for professional use only.

15.4) Code letter, risk phrases, safety phrases and hazard designation of the kit and its components :

Please see 2.3) and 3.1) of this MSDS.

16) Other Information:

This MSDS is based on our present knowledge. However, it is intended only as a guide to the appropriate precautionary handling of the kit and its components for professional use. Individuals receiving this MSDS must exercise their independent judgment in determining its appropriateness for a particular purpose