MATERIAL SAFETY DATA SHEET

Cat# BN00997, Gamma Glutamyl Transferase (GGT) Activity Colorimetric Assay Kit

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **Gamma Glutamyl Transferase (GGT) Activity Colorimetric Assay Kit**

PRODUCT CODES: **Cat# BN00997**

MANUFACTURER: **Assay Genie (brand of Reagent Genie Ltd.)**

ADDRESS: **G1 The Steelworks, Foley Street, Dublin 1**

EMERGENCY PHONE: **+353 1 8879802**

SECTION 2: HAZARDS IDENTIFICATION

Component	Description	Volume	Safety Information
GGT Assay Buffer	Proprietary Buffer	25 ml	No hazards
GGT Substrate	Solution (Contains Hydrochloric acid)	1 bottle	See below
GGT Positive Control	Lyophilized	1 vial	No hazards
*p*NA Standard (2 mM)	In DMSO	400 µl	See below

Hydrochloric acid:
Emergency Overview
GHS Classification: Corrosive to metals (Category 1), H290
GHS Label elements, including precautionary statements
Pictogram:

Signal word: Warning
Hazard statement(s): H290 May be corrosive to metals.
Precautionary statement(s): P234 Keep only in the original container.
P390 Absorb spillage to prevent material damage.
P406 Store in corrosive resistant stainless steel container with a resistant inner liner.
HMIS Classification
Health hazard: 0
Chronic Health Hazard: *
Flammability: 0
Physical hazards: 0
NFPA Rating
Health Hazard: 0
Fire: 0
Reactivity Hazard: 0

DMSO:
Emergency Overview
OSHA Hazards: Combustible Liquid, Target Organ Effect
Target Organs: Eyes, Skin
GHS Classification: Flammable liquids (Category 4)
GHS Label elements, including precautionary statements
Pictogram: none
Signal word: Warning
Hazard statement(s): H227 Combustible liquid
Precautionary statement(s): none
HMIS Classification
Health hazard: 0
Chronic Health Hazard: *
Flammability: 2
Physical hazards: 0
NFPA Rating
Health hazard: 0
Fire: 2
Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed.

Aggravated Medical Condition: Avoid contact w/DMSO solutions containing toxic materials or materials with unknown toxicological properties. DMSO is readily absorbed through the skin and may carry such materials into the body.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	EC-No.	Molecular Weight	Chemical Formula
Hydrochloric acid	7647-01-0	--	--	--
DMSO	67-68-5	200-664-3	78.13	C_2H_6OS

SECTION 4: FIRST AID MEASURES

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.
If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact: Wash off with soap and plenty of water. Consult a physician.
In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 5: FIRE-FIGHTING MEASURES

DMSO:

Suitable extinguishing media: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.
Hazardous combustion products: Hazardous combustion products formed under fire conditions – no data available.
Further information: Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods for cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Avoid inhalation of vapor or mist. Avoid contact with skin and eyes. Provide appropriate exhaust ventilation at places where dust is formed.
Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature: -20 °C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

DMSO:

Components	CAS-No.	Value	Control parameters	Basis
Dimethyl sulfoxide	67-68-5	TWA	250 ppm	USA. Workplace Environmental Exposure Levels (WEEL)

Hydrochloric acid:

Components	CAS-No.	Value	Control parameters	Basis
Hydrogen chloride	7647-01-0	C	2 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Upper Respiratory Tract irritation Not classifiable as a human carcinogen			
		C	5 ppm	USA. NIOSH Recommended

			7 mg/m3	Exposure Limits
		Often used in an aqueous solution.		
		C	5 ppm 7 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		
		C	5 ppm 7 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Avoid contact with skin, eyes, and clothing. Wash hands before breaks and immediately after handling the product.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (Isopropanol)

Property	Hydrochloric acid	DMSO
Appearance:	Liquid	Clear liquid
pH:	No data available	No data available
Water Solubility:	No data available	Completely miscible
Other Solubility:	No data available	No data available
Boiling Point (°C):	No data available	189 °C (372 °F)
Melting Point (°C):	No data available	16-19 °C (61-66 °F)
Flash Point (°C):	No data available	87 °C (189 °F)
Ignition Temperature (°C):	No data available	301 °C (574 °F)
Density:	No data available	1.1 g/ml

SECTION 10: STABILITY AND REACTIVITY

Property	Hydrochloric acid	DMSO
Chemical stability:	Stable under recommended storage conditions	
Conditions to avoid:	No data available	Heat, flames, sparks
Materials to avoid:	Strong oxidizing agents, Bases, Amines, Alkali metals, Copper, Copper alloys	Acid chlorides, phosphorus halides, strong acids, strong oxidizing agents, strong reducing agents
Hazardous decomposition products:	No data available	Carbon oxides, sulfur oxides

SECTION 11: TOXICOLOGICAL INFORMATION

DMSO:

Acute toxicity: LD50 Oral – rat – 14,500 mg/kg
LC50 Inhalation – rat – 4 h – 40250 ppm
LD50 Dermal – rabbit – >5,000 mg/kg
Skin corrosion/irritation: Skin – rabbit – no skin irritation – 4h
Serious eye damage/eye irritation: Eyes – rabbit – mild eye irritation
Respiratory or skin sensitization: no data available

Germ cell mutagenicity: Genotoxicity in vitro – mouse – lymphocyte: Cytogenetic analysis
Genotoxicity in vitro – mouse – lymphocyte: Mutation in mammalian somatic cells
Genotoxicity in vivo – rat – Intraperitoneal: Cytogenetic analysis
Genotoxicity in vivo – mouse – Intraperitoneal: DNA damage
Carcinogenicity: Carcinogenicity – rat – Oral Tumorigenic: equivocal tumorigenic agent by RTECS criteria. Skin and appendages: other: tumors.
Carcinogenicity – mouse – Oral Tumorigenic: equivocal tumorigenic agent by RTECS criteria. Leukemia skin and appendages: other: tumors.

IARC:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: Reproductive toxicity – rat – Intraperitoneal Effects on fertility: abortion
Reproductive toxicity – rat – Intraperitoneal Effects on fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)
Reproductive toxicity – rat – Subcutaneous Effects on fertility: post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants). Effects on fertility: litter size (e.g. # fetuses per litter; measured before birth)
Reproductive toxicity – mouse – Oral Effects on fertility: post-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea). Effects on embryo/fetus: Fetotoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: musculoskeletal system.
Teratogenicity: Developmental toxicity – mouse – Intraperitoneal: Effects on embryo/fetus: Fetotoxicity (except death, e.g. stunted fetus). Specific developmental abnormalities: musculoskeletal system
Specific target organ toxicity – single exposure (GHS): no data available
Specific target organ toxicity – repeated exposure (GHS): no data available
Aspiration hazard: no data available
Potential Health Effects
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed.
Aggravated Medical Condition: Avoid contact w/DMSO solutions containing toxic materials or materials with unknown toxicological properties. DMSO is readily absorbed through the skin and may carry such materials into the body.
Signs and Symptoms of Exposure: Effects due to ingestion may include: nausea, fatigue, and/or headache.
Additional information: RTECS: PV6210000

Hydrochloric acid:
Acute toxicity: no data available
Irritation and corrosion: no data available
Sensitization: no data available
Germ cell mutagenicity: no data available
Carcinogenicity: no data available

IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans (Hydrochloric acid).
ACGIH:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available
Teratogenicity: no data available
Specific target organ toxicity – single exposure (GHS): Inhalation – may cause respiratory irritation.
Specific target organ toxicity – repeated exposure (GHS): no data available
Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Additional information: RTECS: not available

SECTION 12: ECOLOGICAL INFORMATION

DMSO:
Elimination information (persistence and degradability): no data available
Ecotoxicity effects: Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 34,000 mg/l - 96 h; LC50 - Oncorhynchus mykiss (rainbow trout) - 35,000 mg/l - 96 h; Toxicity to daphnia and other aquatic invertebrates.; EC50 - Daphnia pulex (Water flea) - 27,500 mg/l Toxicity to algae EC50 - Lepomis macrochirus (Bluegill) - > 400,000 mg/l - 96 h
Further information on ecology: no data available

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DMSO:
DOT (US): UN-Number: 1993, Class: CBL, Packing group: III; Proper shipping name: Combustible liquid, n.o.s. (Dimethyl sulfoxide); Marine pollutant: No; Poison Inhalation Hazard: No
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

Hydrogen chloride:
DOT (US): UN number: 1789 Class: 8 Packing group: III; Proper shipping name: Hydrochloric acid; Reportable Quantity (RQ): Marine pollutant: No; Poison Inhalation Hazard: No
IMDG: UN number: 1789 Class: 8 Packing group: III EMS-No: F-A, S-B; Proper shipping name: HYDROCHLORIC ACID; Marine pollutant: No
IATA: UN number: 1789 Class: 8 Packing group: III; Proper shipping name: Hydrochloric acid

SECTION 15: REGULATORY INFORMATION

SARA 302 Components: SARA 302: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components: SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title II, Section 313.
SARA 311/312 Hazards: DMSO: Fire Hazard, Chronic Health Hazard
Massachusetts Right To Know Components: Hydrochloric acid, CAS-No. 7647-01-0; Revision Date: 1993-04-24
Pennsylvania Right To Know Components:
Dimethyl sulfoxide CAS-No. 67-68-5
Hydrochloric acid, CAS-No. 7647-01-0; Revision Date: 1993-04-24
New Jersey Right To Know Components:
Dimethyl sulfoxide CAS-No. 67-68-5
Hydrochloric acid, CAS-No. 7647-01-0; Revision Date: 1993-04-24
California Prop. 65 Components: This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

EU regulations:

Component	Risk Phrases	Safety Phrases
DMSO	R10, R36/37/38	S24/25, S36/37/39, S45
Hydrochloric acid	--	--

SECTION 16: OTHER INFORMATION

DISCLAIMER:
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Assay Genie shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.