

# SAFETY DATA SHEET

Cat# BN00531, GST Activity Assay Kit

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** GST Activity Assay Kit  
**PRODUCT CODES:** Cat# BN00531  
**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
GST Assay Buffer	Proprietary Buffer	25 ml	No hazards
GST Substrate (CDNB)	Yellow solid (contains DMSO)	0.5 ml	See below
Glutathione (GSH)	Lyophilized	2 x 17 mg	No hazards
GST Positive Control	Aqueous (0.625 µg/µl)	20 µl	No hazards

### 1-Chloro-2,4-dinitrobenzene:

#### Emergency Overview

**OSHA Hazards:** Toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Corrosive

**GHS Classification:** Acute toxicity, Oral (Category 3)  
Acute toxicity, Inhalation (Category 3)  
Acute toxicity, Dermal (Category 3)  
Skin irritation (Category 2)  
Serious eye damage (Category 1)  
Specific target organ toxicity – repeated exposure (Category 2)  
Acute aquatic toxicity (Category 1)  
Chronic aquatic toxicity (Category 1)

#### GHS Label elements, including precautionary statements

**Pictogram:** none

**Signal word:** none

**Hazard statement(s):** none.

**Precautionary statement(s):** P261 Avoid breathing dust/fume/gas/mist/vapour/spray.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing.  
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P311 Call a POISON CENTER or doctor/physician.  
P501 Dispose of contents/container to an approved waste disposal plant.

#### HMIS Classification

**Health hazard:** 3

**Flammability:** 1

**Physical hazards:** 0

#### NFPA Rating

**Health Hazard:** 3

**Fire:** 1

**Reactivity Hazard:** 0

#### Potential Health Effects

**Inhalation:** Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Skin:** Toxic if absorbed through skin. Causes skin burns.

**Eyes:** Causes eye burns.

**Ingestion:** Toxic if swallowed.

### DMSO:

#### Emergency Overview

**OSHA Hazards:** Combustible Liquid, Target Organ Effect

**Target Organs:** Eyes, Skin

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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 skin and may carry such materials into the body.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	EC-No.	Molecular Weight	Chemical Formula
1-Chloro-2,4-dinitrobenzene (CDNB)	97-00-7	202-551-4	202.55	C <sub>6</sub> H <sub>3</sub> ClN <sub>2</sub> O <sub>4</sub>
DMSO	67-68-5	200-664-3	78.13	C <sub>2</sub> H <sub>6</sub> OS

### 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. Continue rinsing eyes during transport to hospital.

**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:** Wear respiratory protection. 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 contact with skin and eyes. Avoid formation of dust and aerosols. 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.

Recommended storage temperature: -20 °C.

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## 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)

### 1-Chloro-2,4-dinitrobenzene:

Contains no substances with occupational exposure limit values.

#### Personal protective equipment

##### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) 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

Property	1-Chloro-2,4-dinitrobenzene	DMSO
Appearance:	Yellow solid	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)	315 °C (599 °F)	189 °C (372 °F)
Melting Point (°C)	48-50 °C (118-122 °F)	16-19 °C (61-66 °F)
Flash Point (°C)	194 °C (381 °F)	87 °C (189 °F)
Ignition Temp. (°C)	No data available	301 °C (574 °F)
Density:	No data available	1.1 g/ml

## SECTION 10: STABILITY AND REACTIVITY

Property	1-Chloro-2,4-dinitrobenzene	DMSO
Chemical Stability:	Stable under recommended storage conditions	
Conditions to Avoid:	Light	Heat, flames, sparks
Materials to Avoid:	No data available	Acid chlorides, phosphorus halides, strong acids, strong oxidizing agents, strong reducing agents
Hazardous decomposition: products:	Carbon oxides, nitrogen oxides	Carbon oxides, sulfur oxides

## SECTION 11: TOXICOLOGICAL INFORMATION

### 1-Chloro-2,4-dinitrobenzene:

**Acute toxicity:** LD50 Oral – rat – 640 mg/kg □ Remarks: Blood: Methemoglobinemia-carboxyhemoglobin

LD50 Dermal – rabbit – 130 mg/kg □ Remarks: Skin irritation.

**Skin corrosion/irritation:** Skin – rabbit – severe skin irritation – 24 h

**Serious eye damage/eye irritation:** Eyes – rabbit – severe eye irritation – 24 h

**Respiratory/skin sensitization:** no data available

**Germ cell mutagenicity:** Genotoxicity in vitro – rat – liver □ DNA damage

Genotoxicity in vitro – hamster – kidney □ morphological transformation

Genotoxicity in vivo – mouse – intraperitoneal □ DNA damage

**Carcinogenicity:**

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- 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:** no data available

**Teratogenicity:** no data available

**Specific target organ toxicity – single exposure (GHS):** no data available

**Specific target organ toxicity – repeated exposure (GHS):** May cause damage to organs through prolonged or repeated exposure.

**Aspiration hazard:** no data available

### Potential Health Effects

**Inhalation:** Toxic if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

**Skin:** Toxic if absorbed through skin. Causes skin burns.

**Eyes:** Causes eye burns.

**Ingestion:** Toxic if swallowed.

**Signs and Symptoms of Exposure:** Exposure may cause cough, shortness of breath, headache, nausea, vomiting.

**Synergistic effects:** no data available

**Additional information:** RTECS: CZ0525000

### 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 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

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## SECTION 12: ECOLOGICAL INFORMATION

### 1-Chloro-2,4-dinitrobenzene:

**Persistence and degradability:** no data available

**Toxicity: Toxicity to fish:** LC50 – Danio rerio (Zebra fish) – 0.32 mg/l – 96 h

**Toxicity to daphnia and other aquatic invertebrates:** EC50 – Daphnia magna (Water flea) – 0.49 mg/l – 48 h

**Bioaccumulative potential:** no data available

**Mobility in soil:** no data available

**PBT and vPvB assessment:** no data available

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

### 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 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

### 1-Chloro-2,4-dinitrobenzene:

**DOT (US):** UN-number: 3441, Class: 6.1, Packing group: II; Proper shipping name: Chlorodinitrobenzenes, solid; Marine pollutant: Yes; Poison inhalation hazard: No

**IMDG:** UN-number: 3441, Class: 6.1, Packing group: II; EMS-No. F-A, S-A; Proper shipping name: CHLORODINITROBENZENES, SOLID; Marine pollutant: Yes

**IATA:** UN-number: 3411; Class: 6.1; Packing group: II; Proper shipping name: Chlorodinitrobenzenes, solid

### 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.

## SECTION 15: REGULATORY INFORMATION

**OSHA Hazards:** 1-Chloro-2,4-dinitrobenzene: Toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Corrosive

**SARA 302 Components:** SARA 302: No chemicals 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 III, Section 313.

**SARA 311/312 Hazards:** 1-Chloro-2,4-dinitrobenzene: Acute Health Hazard

**DMSO:** Fire Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components:** 1-Chloro-2,4-dinitrobenzene, CAS-No. 97-00-7; Revision Date: 1993-04-24

**Pennsylvania Right To Know Components:** 1-Chloro-2,4-dinitrobenzene, CAS-No. 97-00-7; Revision Date: 1993-04-24

Dimethyl sulfoxide CAS-No. 67-68-5

**New Jersey Right To Know Components:** 1-Chloro-2,4-dinitrobenzene, CAS-No. 97-00-7; Revision Date: 1993-04-24

Dimethyl sulfoxide CAS-No. 67-68-5

**California Prop. 65 Components:** This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

### EU regulations

Component	Risk Phrases	Safety Phrases
1-Chloro-2,4-dinitrobenzene	R23/24/25, R33, R43, R50/53	S28A, S36/37, S45, S60, S61
DMSO	R10, R36/37/38	S24/25, S36/37/39, S45

## SECTION 16: OTHER INFORMATION:

OTHER INFORMATION:

# **SAFETY DATA SHEET**

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**PREPARATION 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.