

SAFETY DATA SHEET

Cat# BN00654, TUNEL Assay Kit (BrdU DNA)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: TUNEL Assay Kit (BrdU DNA)
PRODUCT CODES: Cat# BN00654
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 |
|--------------------------|---|---------|--------------------|
| Positive Control Cells | Clear solution in 70% ethanol | 5 ml | See below |
| Negative Control Cells | Clear solution in 70% ethanol | 5 ml | See below |
| Wash Buffer | Proprietary Buffer | 120 ml | No hazards |
| Reaction Buffer | Proprietary Buffer (contains C ₂ H ₇ AsO ₂) | 0.6 ml | See below |
| TdT Enzymes | Lyophilized | 45 µl | No hazards |
| Br-dUTP | Clear solution (contains 5-Bromo-2'-deoxyuridine 5'-triphosphate) | 0.48 ml | No hazards |
| Rinse Buffer | Proprietary Buffer | 120 ml | No hazards |
| Anti-BrdU-FITC Antibody | Fluorescein labeled antibody in solution | 0.3 ml | No hazards |
| PI/RNase Staining Buffer | Proprietary Buffer | 30 ml | No hazards |

Ethanol:

Emergency Overview

OSHA Hazards: Highly flammable liquid, Target organ effect, Irritant, Carcinogen

Target Organs: Nerves, Liver, Heart

GHS Classification: Flammable liquids (Category 2)
Skin irritation (Category 2)
Eye irritation (Category 2B)
Specific target organ toxicity – single exposure (Category 3)

GHS Label elements, including precautionary statements



Pictogram:

Signal word: Danger

Hazard statement(s): H225 Highly flammable liquid and vapor
H315+H320 Causes skin and eye irritation.
H335 May cause respiratory irritation.

Precautionary statement(s): P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification

Health hazard: 2

Chronic health hazard: *

Flammability: 3

Physical hazards: 0

NFPA Rating

Health Hazard: 2

Fire: 3

Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.

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Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

Cacodylic acid:

Emergency Overview

OSHA Hazards: Carcinogen, Target organ effect, Toxic by inhalation, Toxic by ingestion, Irritant, Teratogen

Target Organs: Kidney, Gastrointestinal tract, Skin, Heart, Brain, Bone marrow, Nerves, Liver

GHS Classification: Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 3)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity – single exposure (Category 3)
Chronic aquatic toxicity (Category 4)

GHS Label elements, including precautionary statements

Pictogram:



Signal word: warning

Hazard statement(s): H301+H331 Toxic if swallowed inhaled or in contact with skin
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statement(s): P261 Avoid breathing dust/fume/gas/mist/vapors/spray.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

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.

HMIS Classification

Health hazard: 2

Chronic health hazard: *

Flammability: 0

Physical hazards: 0

NFPA Rating

Health Hazard: 2

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation: Toxic if inhaled. Causes respiratory tract irritation.

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: Toxic if swallowed.

Aggravated Medical Condition: Cacodylic acid may be partially reduced to inorganic arsenic in the body. Exposure to arsenic compounds can cause: burning, dry nose, dry mouth, muscle cramps/spasms. May cause irritation of the gastrointestinal tract: vomiting, nausea, diarrhea, shock, even death.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS Number | EC-No. | Molecular Weight | Chemical Formula |
|----------------|------------|-----------|------------------|--|
| Ethanol | 64-17-5 | 200-578-6 | 46.07 | C ₂ H ₆ O |
| Cacodylic Acid | 75-60-5 | 200-883-4 | 138.00 | C ₂ H ₇ AsO ₂ |

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: DO NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 5: FIRE-FIGHTING MEASURES

Ethanol:

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Condition of flammability: Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters: Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products: Hazardous combustion products formed under fire conditions— no data available.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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 inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition (no smoking). Take measures to prevent the buildup of electrostatic charge.

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

Ethanol:

| Components | CAS-No. | Value | Control parameters | Basis |
|--|---------|-------|--------------------------------------|---|
| Ethanol | 64-17-5 | TWA | 1,000 ppm | USA. ACGIH Threshold Limit Values (TLV) |
| Remarks: Upper respiratory tract irritation. Confirmed animal carcinogen with unknown relevance to humans. | | | | |
| | | TWA | 1,000 ppm 1,900 mg/m ³ | USA. OSHA: TABLE Z-1 Limits for Air Contaminants – 1910.1000 |
| | | TWA | 1,000 ppm 1,900 mg/m ³ | USA. Occupational Exposure Limits (OSHA): Table Z-1 Limits for Air Contaminants |
| The value in mg/m ³ is approximate. | | | | |
| | | TWA | 1,000 ppm 1,900 mg/m ³ | USA. NIOSH recommended exposure limits |

Cacodylic acid:

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 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

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| Property | Ethanol | Cacodylic acid |
|-------------|--------------|-------------------------|
| Appearance: | Clear liquid | White crystalline solid |

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| | | |
|---------------------|-------------------------|-------------------------|
| pH: | No data available | No data available |
| Water Solubility: | Completely soluble | No data available |
| Boiling Point (°C) | 78-80 °C (172.4-176 °F) | No data available |
| Melting Point (°C) | -144 °C (-227.2 °F) | 195-196 °C (383-385 °F) |
| Flash Point (°C) | 14 °C (57.2 °F) | No data available |
| Ignition Temp. (°C) | 363 °C (685°F) | No data available |
| Density: | 0.79 g/cm ³ | No data available |

SECTION 10: STABILITY AND REACTIVITY

| Property | Ethanol | Cacodylic acid |
|-----------------------------------|---|---------------------------------------|
| Chemical Stability: | Stable under recommended storage conditions | |
| Conditions to Avoid: | Heat, flames, sparks, direct sunlight | Moisture |
| Materials to Avoid: | Alkali metals, ammonia, oxidizing agents, peroxides | Strong oxidizing agents, strong bases |
| Hazardous decomposition products: | Carbon oxides | Carbon oxides, arsenic oxides |

SECTION 11: TOXICOLOGICAL INFORMATION

Ethanol:

Acute toxicity: LD50 Oral – rat – 7,060 mg/kg □ Remarks: Lungs, thorax, or respiration : other changes

LC50 Inhalation – rat – 10 h – 20000 ppm

Skin corrosion/irritation: Skin – rabbit – irritating to skin – 24 h

Serious eye damage/eye irritation: Eyes – rabbit – mild eye irritation – 24 h (Draize test)

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity: Carcinogenicity – mouse – oral □ Tumorigenic: equivocal tumorigenic agent by RTECS criteria. Liver: tumors. Blood: Lymphomas including Hodgkin's disease.

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 – human – female – oral □ Effects on newborn: apgar score (human only), other neonatal measures or effects, and drug dependence.

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

Aspiration hazard: no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: Exposure may cause central nervous system depression, narcosis, and/or damage to the heart. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects: no data available

Additional information: RTECS: KQ6300000

Cacodylic acid:

Acute toxicity: LD50 Oral – rat – 644 mg/kg

Irritation and corrosion: no data available

Sensitization: no data available

Germ cell mutagenicity: Laboratory experiments have shown mutagenic effects.

Carcinogenicity: Carcinogenicity – mouse – oral □ Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Lung, Thorax, or Respiration: Tumors.

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: 1 – Group 1: Carcinogenic to humans (Dimethylarsinic acid)

2B – Group 2B: Possibly carcinogenic to humans (Cobalt dichloride).

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- 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 – mouse – Oral □ Effects on Newborn: Growth statistics (e.g. reduced weight gain). Effects on Newborn: Physical. Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

Potential Health Effects

Inhalation: Toxic if inhaled. Causes respiratory tract irritation.

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: Toxic if swallowed.

Aggravated Medical Condition: Cacodylic acid may be partially reduced to inorganic arsenic in the body. Exposure to arsenic compounds can cause: burning, dry nose, dry mouth, muscle cramps/spasms. May cause irritation of the gastrointestinal tract: vomiting, nausea, diarrhea, shock, even death.

Signs and Symptoms of Exposure: Exposure may cause drowsiness, tremors, convulsions, dry mouth, metallic taste, loss of appetite, respiratory difficulties, garlic-like breath odor, garlic-like perspiration.

Additional information: RTECS: CH7525000

SECTION 12: ECOLOGICAL INFORMATION

Cacodylic acid:

Persistence and degradability: no data available

Toxicity: Toxicity to fish: LC50 – *Lepomis macrochirus* – >180 mg/l – 96 h

Bioaccumulative potential: Bioaccumulation: *Gambusia affinis* (Mosquito fish) – 32 d; Bioconcentration factor (BCF): 21

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.

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

Ethanol:

DOT (US): UN-number: 1170, Class: 3, Packing group: II; Proper shipping name: Ethanol; Marine pollutant: No; Poison inhalation hazard: No

IMDG: UN-number: 1170, Class: 3, Packing group: II; EMS-No: F-E, S-D; Proper shipping name: ETHANOL; Marine pollutant: No

IATA: UN-number: 1170, Class: 3, Packing group: II; Proper shipping name: Ethanol

Cacodylic acid:

DOT (US): UN-number: 1572, Class: 6.1, Packing group: II; Proper shipping name: Cacodylic acid; Reportable Quantity (RQ): 1 lb.; Marine pollutant: No; Poison inhalation hazard: No

IMDG: UN-number: 1572, Class: 6.1, Packing group: II; EMS-No: F-A, S-A; Proper shipping name: CACODYLIC ACID; Marine pollutant: No

IATA: UN-number: 1572, Class: 6.1, Packing group: II; Proper shipping name: Cacodylic acid

SECTION 15: REGULATORY INFORMATION

OSHA Hazards:

Ethanol: Highly flammable liquid, Target organ effect, Irritant, Carcinogen

Cacodylic acid: Carcinogen, Target organ effect, Toxic by inhalation, Toxic by ingestion, Irritant, Teratogen

SARA 302 Components: The following components are subject to reporting levels established by SARA Title III, Section 302:

SARA 313 Components: The following components are subject to reporting levels established by SARA Title III, Section 313:

SARA 311/312 Hazards:

Ethanol: Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Cacodylic acid: Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components:

Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01

Cacodylic acid, CAS-No. 75-60-5; Revision Date: 1993-04-24

Pennsylvania Right To Know Components:

Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01

Cacodylic acid, CAS-No. 75-60-5; Revision Date: 1993-04-24

New Jersey Right To Know Components:

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Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01

Cacodylic acid, CAS-No. 75-60-5; Revision Date: 1993-04-24

California Prop. 65 Components: WARNING! This product contains a chemical known to the State of California to cause cancer:

Cacodylic acid, CAS-No. 75-60-5; Revision Date: 2007-09-28

EU regulations

| Component | Risk Phrases | Safety Phrases |
|----------------|-------------------------------|----------------------------------|
| Ethanol | R11, R20/21/22 | S16, S36/37/39, S45 |
| Cacodylic acid | R23, R25, R36/37/38, R45, R53 | S22, S24/25, S36/37/39, S45, S46 |

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.