

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product code TAK-P53-196
Product name TF-Detect™ Human P53 Activity Assay Kit

Contact Manufacturer

GeneCopoeia, Inc.
9620 Medical Center Drive, Suite 101
Rockville, MD 20850
USA

Phone: 301-762-0888
Toll free: 1-866-360-9531
Fax: 301-762-3888

SECTION 2: HAZARDS IDENTIFICATION

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

GHS: Not a hazardous substance or mixture.

Signal Word

N/A

Health Hazards

Biosafety Level 1: Use Biosafety Level 1 containment procedures. This product is not known to cause disease in healthy adult humans. This product has not been screened for Hepatitis B, human immunodeficiency viruses or other adventitious agents. Universal Precautions according to 29 CFR 1910.1030 should be followed at all times when handling this product.

Principle Routes of Exposure

Potential Health Effects

Eyes	Data not available.
Skin	Data not available.
Inhalation	Data not available.
Ingestion	Data not available.

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

GHS: Classification in accordance with 29 CFR 1910 (OSHA HCS)

Classification: Acute Tox. 4

Hazard Statement: H302 : Harmful if swallowed.

Precautionary Statement: P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.

Symbols of Danger: GHS07: Warning



Data for 100% Hazardous Chemical

ROUTES OF EXPOSURE: The substance can be absorbed into the body by ingestion.

INHALATION RISK: A harmful contamination of the air will not or will only very slowly be reached on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.

SHORT-TERM EXPOSURE: The substance may cause effects on the kidneys , resulting in kidney impairment The substance may cause effects on the central nervous system and liver by ingestion . Exposure by ingestion may result in death.

LONG-TERM EXPOSURE: Not Available

3. Phosphate buffered saline

GHS - Classification

Principle Routes of Exposure

Potential Health Effects

24 hour Emergency Response:

866-536-0631

301-431-8585

Outside of the U.S. +1-301-431-8585

eyes

May cause eye irritation with susceptible persons.

Skin

May cause skin irritation in susceptible persons.

inhalation

May be harmful by inhalation

Ingestion: May be harmful if swallowed

Specific effects

Carcinogenic effects: None

Mutagenic effects: None

Reproductive toxicity: None

Sensitization: None

Target Organ Effects: No known effects under normal use conditions

4. Tris buffered saline

Caution! This is expected to be a low hazard for usual industrial handling. Good laboratory procedures are recommended when handling this compound. May cause eye, skin, and respiratory tract irritation.

Target Organs: No data found.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation.

Ingestion: May cause irritation of the digestive tract. Low hazard for usual industrial handling. The toxicological properties of this substance have not been fully investigated.

Inhalation: May cause respiratory tract irritation. Low hazard for usual industrial handling. The toxicological properties of this substance have not been fully investigated.

Chronic: No information found.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

Formula: $C_{16}H_{20}N_2$

Molecular weight: 240.34 g/mol

CAS-No.: 54827-17-7

EC-No.: 259-364-6

No components need to be disclosed according to the applicable regulations.

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

% Weight: ≤ 3%

CAS #:111-46-6%

Classification

Acute Tox. 4

3. Phosphate-Buffered Saline

The product contains no substances which at their given concentration, are considered to be hazardous to health. We recommend handling all chemicals with caution.

4. Tris buffered saline

Risk Phrases: CAS#:77-86-1

Chemical Name: Tris (hydroxymethyl) aminomethane

%:0-3

EINECS#: 201-064-4

Hazard Symbols:

Risk Phrases:

CAS#:7447-40-7

Chemical Name: Potassium chloride

%: <1

EINECS#:231-211-8

Hazard Symbols:

Risk Phrases: 34 37

CAS#:7647-01-0

Chemical Name: Hydrochloric acid

%: <3

EINECS#:231-595-7

Hazard Symbols:C

Risk Phrases: CAS#:7647-14-5

Chemical Name: Sodium chloride

%:5-10E

INECS#:231-598-3

Hazard Symbols:

Risk Phrases: CAS#:7732-18-5

Chemical Name: Water

%: 85-90

INECS#:231-598-3

Hazard Symbols:

Text for R-phrases: see Section 16

Risk Phrases: None listed

Hazard Symbols: None listed

SECTION 4: FIRST AID MEASURES

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Eye contact

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Ingestion

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

Inhalation	Remove to fresh air. Call a physician or poison control center immediately.
Notes to physician	Treat symptomatically

SECTION 5: FIREFIGHTING MEASURES

Fire Acute Hazard: Combustible	No open flames
Chemical Dangers:	Reacts violently with strong oxidants causing fire and explosion hazard. Attacks some forms of plastic.
Suitable extinguishing media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide
Special protective equipment for firefighters	Wear self-contained breathing apparatus and protective suit.
Special hazards arising from the substance or mixture	Carbon oxides

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Avoid breathing of vapours, mist, or gas. Vapours can accumulate in low areas.
Methods for cleaning up	Prevent further leakage or spillage if safe to do so. Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not allow material to contaminate ground water system. See Section 12 for more information

SECTION 7: HANDLING AND STORAGE

Handling	Always wear recommended Personal Protective Equipment. Avoid contact with skin, eyes or clothing. Remove all sources of ignition
Storage	Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

• INHALATION	Ventilation.
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- EYES
- SKIN
- INGESTION

Safety spectacles.
Protective gloves.Controls
Do not eat, drink, or smoke during work.

Engineering Controls

Appropriate engineering controls

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

Personal protective equipment:

Eye/face 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 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.

Full contact Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Splash contact Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

- a) Appearance Form: solid
- b) Odour No data available
- c) Odour Threshold: No data available
- d) pH No data available
- e) Melting point/freezing point Melting point/range: 168 -171 °C (334 -340 °F)
- f) Initial boiling point and boiling range 168 -169 °C (334 -336 °F)
- g) Flash point No data available
- h) Evaporation rate No data available
- i) Flammability (solid, gas) No data available
- j) Upper/lower flammability or explosive limits No data available
- k) Vapour pressure No data available
- l) Vapour density No data available
- m) Relative density No data available
- n) Water solubility insoluble
- o) Partition coefficient: n-octanol/water No data available
- p) Auto-ignition temperature No data available
- q) Decomposition temperature No data available
- r) Viscosity No data available
- s) Explosive properties No data available
- t) Oxidizing properties No data available

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

General Information

Form: Liquid, pH 0.5-1.0
Boiling point: 244 °C
Melting point: -6.5°C
Relative density (water = 1): 1.12
Temperature: 20 °C
Solubility in water: miscible
Vapour pressure, Pa at 20°C: 2.7
pH-VALUE: 6 - 8
Temperature: 20 °C
Concentration: 200 g/l
Relative vapour density (air = 1): 3.7
Flash point: 124°C c.c.
Auto-ignition temperature: 229°C
Explosive limits, vol% in air: 1.6-10.8
Octanol/water partition coefficient as log Pow: -1.47

3. Phosphate buffered saline

Form: Liquid

Appearance: No information available

Odor: No information available

Odor Threshold: No information available

Boiling point / boiling range °C No data available °F No data available

Melting point / melting range °C No data available °F No data available

flash point °C No data available °F No data available

Autoignition Temperature °C No data available °F No data available

Evaporation rate: No data available

Flammability (solid, gas): No data available

Oxidizing properties: No information available

Water solubility: soluble

Upper explosion limit: No data available

Lower explosion limit: No data available

Partition coefficient: n-octanol/water: No data available

Vapor Pressure: No data available

vapor density: No data available

4. Tris buffered saline

Physical State: Liquid

Color: colorless

Odor: Not available

pH: 7.4

Vapor Pressure: Not available

Vapor Density: >1.00

Evaporation Rate: Not available

Viscosity: Not available

Boiling Point: > 100 deg C (> 212.00)

Freezing/Melting Point: Not available

Decomposition Temperature: Not available

Solubility in water: Soluble

Specific Gravity/Density: >1.000

Molecular Formula: Solution

Molecular Weight: 0

SECTION 10: STABILITY AND REACTIVITY

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

10.1 Reactivity: No data available

10.2 Chemical stability: Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions: No data available

10.4 Conditions to avoid: Exposure to moisture Light.

10.5 Incompatible materials Metals, Strong acids, Strong oxidizing agents

10.6 Hazardous decomposition products: Hazardous decomposition products formed under fire conditions.-

Carbon oxides, Nitrogen oxides (NOx)

Other decomposition products-No data available

In the event of fire: see section 5

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

Chemical Stability: Stable under normal conditions

Incompatible materials to avoid: Strong oxidants

Hazardous decomposition products: Upon evaporation of water, toxic gases and vapors may be released if involved in a fire

Hazardous polymerization: Will not occur

Data for 100% Hazardous chemical

Chemical Hazards: Reacts violently with strong oxidants causing fire and explosion hazard. Attacks some form of plastic.

Physical dangers: Not available

3. Phosphate buffered saline

Stability: Stable under normal conditions.

Materials to avoid: No dangerous reaction known under conditions of normal use.

Possibility of hazardous reactions: Hazardous reaction has not been reported

Hazardous decomposition products: None under normal use conditions.

Polymerization: Hazardous polymerization does not occur.

Conditions to avoid: None under normal processing.

4. Tris buffered saline

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: Incompatible materials.

Incompatibilities with Other Materials: Water reactive substances (e.g. acetic anhydride, alkyl aluminum chloride, calcium carbide, ethyl dichlorosilane).

Hazardous Decomposition Products: Carbon monoxide, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

SECTION 11: TOXICOLOGICAL INFORMATION

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

11.1

Information on toxicological effects

Acute toxicity: No data available

Inhalation: No data available

Dermal: No data available

Skin corrosion/irritation: No data available

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitization: No data available

Germ cell mutagenicity

Mouse lymphocyte: Mutation in mammalian somatic cells.

Mouse Micronucleus test

Carcinogenicity

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.

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

Specific target organ toxicity -single exposure: No data available

Specific target organ toxicity -repeated exposure: No data available

Aspiration hazard: No data available

Additional Information

RTECS: DV2300000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

Acute toxicity

The toxicological risks are minor due to the low concentration of hazardous ingredients. The following toxicological information is for the hazardous ingredient in pure form.

LD50 Oral

LD50 oral rat: 12600 mg/kg

Reference: Raw Material Data Handbook, Vol.1: Organic Solvents, 1974. Vol. 1, Pg. 25, 1974.

LD50 Dermal

LD50 dermal rat/rabbit: 11900 mg/kg

Species: Rabbit

Reference: Raw Material Data Handbook, Vol.1: Organic Solvents, 1974. Vol. 1, Pg. 25, 1974.

LC50 Inhalation

LC50 Fish (96 hours)

Minimum: 75200 mg/l

Maximum: 75200 mg/l

Median: 75200 mg/l

Study number: 1

Reference: Geiger, D.L., L.T. Brooke, and D.J. Call 1990. Acute Toxicities of Organic Chemicals to Fathead Minnows (*Pimephales promelas*), Volume 5. Ctr.for Lake Superior Environ.Stud., Univ.of Wisconsin-Superior, Superior, WI :332 p.

Chronic Toxicity

Carcinogenicity: Not Applicable

Irritation: Data for 100% Diethylene Glycol: Eyes - rabbit | Result: No eye irritation

Corrosivity: Data for 100% Diethylene Glycol: Skin - rabbit | Result: No skin irritation

(OECD Test Guideline 404)

Sensitization: Data for 100% Diethylene Glycol: Maximisation Test - guinea pig | Result: Did not cause sensitisation on lab

Neurological Effects: Not Available

Mutagenic Effects: Not Available

Reproductive Effects: Not Available

Developmental Effects: Not Available

Target Organ Effects: Data for 100% Diethylene Glycol: Kidneys, Central Nervous System and Liver

Other adverse effects: Not Available

3. Phosphate buffered saline

Acute Toxicity: Not hazardous

Principle Routes of Exposure

Potential Health Effects : eyes: May cause eye irritation with susceptible persons.

Skin: May cause skin irritation in susceptible persons.

Inhalation: May be harmful by inhalation.

Ingestion: May be harmful if swallowed.

Carcinogenic effects: None.

Mutagenic effects: None.

Reproductive toxicity: None.

Sensitization: None.

Target Organ Effects: No known effects under normal use conditions

4. Tris buffered saline

CAS# 77-86-1: TY2900000

CAS# 7447-40-7: TS8050000

CAS# 7647-

01-0: MW4025000 MW4031000

CAS# 7647-14-5: VZ4725000

CAS# 7732-18-5: ZC0110000

RTECS:

CAS# 77-86-1:

Oral, rat: LD50 = 5900 mg/kg;

.

RTECS:

CAS# 7447-40-7:

Draize test, rabbit, eye: 500 mg/24H Mild;

Oral, mouse: LD50 = 1500 mg/kg;

Oral, rat: LD50 = 2600 mg/kg;

.

RTECS:

CAS# 7647-01-0:

Inhalation, mouse: LC50 = 1108 ppm/1H;

Inhalation, mouse: LC50 = 20487 mg/m³/5M;

Inhalation, mouse: LC50 = 3940 mg/m³/30M;

Inhalation, mouse: LC50 = 8300 mg/m³/30M;

Inhalation, rat: LC50 = 3124 ppm/1H;

Inhalation, rat: LC50 = 60938 mg/m³/5M;

Inhalation, rat: LC50 = 7004 mg/m³/30M;

Inhalation, rat: LC50 = 45000 mg/m³/5M;

Inhalation, rat: LC50 = 8300 mg/m³/30M;

Oral, rabbit: LD50 = 900 mg/kg;

RTECS:

CAS# 7647-14-5:

Draize test, rabbit, eye: 100 mg Mild;

Draize test, rabbit, eye: 100 mg/24H Moderate;

Draize test, rabbit, eye: 10 mg Moderate;

Draize test, rabbit, skin: 50 mg/24H Mild;

Draize test, rabbit, skin: 500 mg/24H Mild;

Inhalation, rat: LC50 = >42 gm/m³/1H;

Oral, mouse: LD50 = 4 gm/kg;

Oral, rat: LD50 = 3000 mg/kg;

Skin, rabbit: LD50 = >10 gm/kg;

RTECS:

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

.

Carcinogenicity:

Tris (hydroxymethyl) aminomethane

-

Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Potassium chloride

-

Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Hydrochloric acid

-

IARC: Group 3 (not classifiable)

Sodium chloride

-

Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Water

-

Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Other:

See actual entry in RTECS for complete information.

SECTION 12: ECOLOGICAL INFORMATION

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

12.1

Toxicity: No data available

12.2

Persistence and degradability: No data available

12.3

Bioaccumulative potential: No data available

12.4

Mobility in soil: No data available

12.5

Results of PBT and vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6

Other adverse effects: No data available

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

Ecotoxicity: Data for 100% 2,2' -oxybisethanol diethylene glycol : Aquatic Toxicity: > 32,000 ppm/96 hr/mosquito fish/TLm/ fresh water

Waterfowl Toxicity: Currently not available

Biological Oxygen Demand (BOD): 6%, 5 days

Persistence/Degradability: Data for 100% 2,2' -oxybisethanol diethylene glycol : Readily Biodegradable
Mobility in Environmental Media: Data for 100% 2,2' -oxybisethanol diethylene glycol : Using a structure estimation method based on molecular connectivity indices(1), the Koc of diethylene glycol can be estimated to be 1(SRC). According to a classification scheme(2), this estimated Koc value suggests that diethylene glycol is expected to have very high mobility in soil. [(1) Meylan WM et al; Environ Sci Technol 26: 1560-67 (1992) (2) Swann RL et al; Res Rev 85: 17-28 (1983)]
PEER REVIEWED

Bioaccumulation/ Accumulation: Data for 100% 2,2' -oxybisethanol diethylene glycol : An estimated BCF of 3 was calculated in fish for diethylene glycol(SRC), using an estimated log Kow of -1.5(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC). [(1) Meylan WM, Howard PH; J Pharm Sci 84: 83-92 (1995) (2) Meylan WM et al; Environ Toxicol Chem 18: 664-72 (1999) (3) Franke C et al; Chemosphere 29: 1501-14 (1994)]
PEER REVIEWED

3. Phosphate buffered saline

Ecotoxicity: No information available.
None under normal use conditions.
Mobility: No information available.
Biodegradation: Inherently biodegradable.
Bioaccumulation: Material does not bioaccumulate.

4. Tris buffered saline

Not available

SECTION 13: DISPOSAL CONSIDERATIONS

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

Product: Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging: Dispose of as unused product.

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

Waste Disposal Method:
Observe all Federal, State and Local laws concerning health and pollution. Data for 100% 2,2' -oxybisethanol diethylene glycol : Collection of small amounts of substance: Place in a collection container for halogen-free organic solvents and solutions of halogen-free organic substances. Collection vessels must be clearly labelled with a systematic description of their contents and with the hazard symbol and the R and S

phrases. Store the vessels in a well-ventilated location. Entrust them to the appropriate authorities for disposal.

Contaminated Packaging:

Avoid contact with skin and clothing. Place contaminated packaging in a break proof

outer vessel and dispose on in compliance with national and local regulations.

US EPA Waste Number:

EPA AEGL: Not listed

3. Phosphate buffered saline

Dispose of contents/containers in accordance with local regulations.

4. Tris buffered saline

Dispose of contents/containers in accordance with local regulations.

SECTION 14: TRANSPORT INFORMATION

1. 3,3',5,5'-Tetramethylbenzidine (TMB substrate)

DOT (US)

Not dangerous goods

IMDG

Not dangerous goods

IATA

Not dangerous goods

2. TMB Stop Solution. Contains 100% Diethylene Glycol.

DOT:

Not Available

IATA:

Not Available

13. DISPOSAL MEASURES

ADR (road)/ RID (rail):

Not Available

IMDG (sea):

Not Available

General Transport Regulations

Data for 100% 2,2' -oxybisethanol

diethylene glycol : Grades of Purity: Regular grade;

polyester

grade

7.2 Storage Temperature: Ambient

Inert Atmosphere: No requirement

Venting: Open (flame arrester)

IMO Pollution Category: D

Ship Type: Data not available

Barge Hull Type: Currently not available

3. Phosphate buffered saline

IATA:

Proper Shipping Name: No dangerous good in sense of these transport regulations

Hazard Class: None

Subsidiary class: None

Packing group: None

UN-No: None

Environmental hazards: None

4. Tris buffered saline

US DOT

Shipping Name: Not regulated as a hazardous material

Hazard Class:

UN Number:

Packing Group:

Canada TDG

Shipping Name: Not available

Hazard Class:

UN Number:

Packing Group:

USA RQ: CAS# 7647-01-0: 5000 lb final RQ; 2270 kg final RQ

SECTION 15: REGULATORY INFORMATION

UNITED STATES:

TSCA:

This product is solely for research and development purposes only and may not be used, processed or distributed for a commercial purpose. It may only be handled by technically qualified individuals.

Prop 65 Listed Chemicals: No Prop 65 Chemicals.

No 313 Chemicals

CANADA:

DSL/NDSL: Not determined.

COMPONENT ETHANOL

WHMIS Classification D2B

EUROPEAN UNION:

PRODUCT RISK PHRASES: None assigned.

PRODUCT SAFETY PHRASES: Not applicable.

PRODUCT CLASSIFICATION: Not classified

SECTION 16: OTHER INFORMATION

Abbreviations

N/A - Data is not applicable or not available

SARA - Superfund and Reauthorization Act
HMIS - Hazard Material Information System
WHMIS - Workplace Hazard Materials Information System
NTP - National Toxicology Program
OSHA - Occupational Health and Safety Administration
IARC - International Agency for Research on Cancer
PROP 65 - California Safe Drinking Water and Toxic Enforcement Act of 1986
EINECS - European Inventory of Existing Commercial Chemical Substances

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End of Safety Data Sheet