

MATERIAL SAFETY DATA SHEET

**VIVANTIS TECHNOLOGIES SDN BHD
REVONGEN CORPORATION CENTER**

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SECTION 1: CHEMICAL IDENTIFICATION

Catalogue Number: PR0612-500g; PR0612-1kg

Product Name: Tris

Intended Use:

For research use only. Not for use in diagnostic procedures.

Company Headquarters:

Vivantis Technologies Sdn Bhd
Revongen Corporation Center
Level 17, Top Glove Tower,
No. 16, Persiaran Setia Dagang,
Setia Alam, Seksyen U13, 40170 Shah Alam,
Selangor Darul Ehsan, Malaysia.

Tel: +6 03 3359 1166

Fax: +6 03 3358 0303

Email: info@vivanttechnologies.com

Website: www.vivanttechnologies.com

Company Manufacturing:

Vivantis Technologies Sdn Bhd
Level 1, Enterprise 2,
Technology Park Malaysia,
Lebuhraya Puchong-Sg. Besi,
57000 Bukit Jalil,
Kuala Lumpur, Malaysia.

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SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.
Tris(hydroxymethyl)aminomethane	77-86-1	201-064-4

Chemical formula: C₄H₁₁NO₃

Synonym: Tris Base; Tris(Hydroxymethyl)Aminomethane; THAM; Tromethamine

SECTION 3: HAZARDS IDENTIFICATION

GHS Classification

GHS labels elements, including precautionary statements



Signal word: Warning

Hazard statements

H315 Causes skin irritation
 H319 Causes serious eye irritation
 H335 May cause respiratory irritation

Precautionary statements

P261 Avoid breathing dust, fume, gas, mist, vapors, spray.
 P305+P351+P338 Rinse cautiously with water for several minutes if contact with eyes. Remove contact lenses, if present and easy to do, and continue rinsing.

HMIS Classification

Health hazard 2
 Flammability 0
 Physical hazards 0

OSHA Hazards

Skin corrosion/irritation- Category 2
 Serious eye damage/eye irritation- Category 2
 Specific target organ toxicity (single exposure)- Category 3

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NFPA Rating

Health hazard	2
Fire	0
Reactivity hazard	0

Potential Health Effects

In case of inhalation, may be harmful and may cause respiratory tract irritation.

In case of ingestion, may be harmful.

In case of eye contact, may cause eye irritation.

In case of skin contact, may be harmful if absorbed through skin and may cause skin irritation.

SECTION 4: FIRST-AID MEASURES

In case of eye contact, wash copiously with water for up to 15 minutes. Seek medical assistance if there is persistent irritation.

In case of skin contact, wash with soap and excess water. Seek medical assistance if irritation is persistent.

In case of inhalation, remove to fresh air. If not breathing give artificial respiration. Seek medical assistance if there are problems.

In case of ingestion, wash out mouth with water provided the person is conscious. Never give anything by mouth to an unconscious person. Seek medical assistance if there is abdominal discomfort.

SECTION 5: FIRE FIGHTING MEASURES

Not flammable or combustible.

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Use water spray, dry chemical, alcohol-resistant foam or carbon dioxide.

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH and full protective gear.

Hazardous decomposition products formed under fire conditions: Carbon oxides, nitrogen oxides

Explosion data – sensitivity to mechanical impact: None.

Explosion data – sensitivity to static discharge: None.

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SECTION 6: ACCIDENTAL RELEASE MEASURES

For personal protection, use personal protective equipment. Avoid breathing vapors, mist or gas. Avoid dust formation. Ensure adequate ventilation. Evacuate personnel to safe areas. For environmental precautions, do not let product enter drains. For cleaning up, sweep up and shovel. Avoid dust formation. Pick up and transfer to suitable, closed containers for disposal. Ventilate area and wash spill site after material pickup is done.

SECTION 7: HANDLING AND STORAGE

Handle in accordance with good industrial hygiene and safety practice. Keep containers tightly closed in a dry, cool and well-ventilated place. Hygroscopic and store under inert gas. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition and heat while apply normal measures of fire prevention protection. Incompatible with strong oxidizing agents and bases.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection	For nuisance exposure use type P95 (US) or type P1 (EU EN143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN143) respirator cartridges. 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 by not 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	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN166 (EU).
Skin and body protection	Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Use engineering measures such as mechanical exhaust or laboratory fume hood to avoid exposure. Handle in accordance with good industrial hygiene and safety practice.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White
Physical state:	Crystalline powder to needle-like crystals
Odor:	No data available
Odor threshold:	No data available
pH:	10.0 – 11.5
Melting Point:	168.5 °C – 171.5°C
Boiling Point:	219 °C - 220°C
Flash Point:	No data available
Auto-ignition temperature:	Not classified as self-heating
Ignition Temperature:	No data available
Explosive Properties:	No data available
Water Solubility:	678 g/l at 20°C (68°F)
Partition coefficient (n-octanol/water):	log Pow: -2.31 at 20°C (68°F)
Bulk density:	800 kg/m ³

SECTION 10: STABILITY AND REACTIVITY

Stable under recommended storage conditions.

Materials to avoid:	Strong oxidizing agents, bases
Hazardous decomposition products:	Carbon oxides, nitrogen oxides
Condition to avoid:	Hygroscopic

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity:

Oral LD50: Rat – 5900mg/kg

Skin corrosion/irritation:	Rabbit – No skin irritation (OECD Test Guideline 404)
Eye damage/eye irritation:	Rabbit – No eye irritation (OECD Test Guideline 405)
Respiratory /skin sensitization:	Guinea pig – Do not cause skin sensitization (OECD Test Guideline 406 – Buehler test)
Germ cell mutagenicity:	in vitro – Not mutagenic in Ames Test; Did not show any chromosomal changes; Negative in vitro assay
Reproductive toxicity:	No data available
Teratogenicity:	No data available
Aspiration hazard:	No data available

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Specific target organ toxicity – single exposure: No data available
 Specific target organ toxicity – repeated exposure: No data available

Carcinogenicity

IARC: No component of the 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 the product present at levels greater than or equal to 0.1% is identified as carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product presents 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 presents at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

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

RTECS: TY2900000

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

EC50: Daphnia magna (water flea) – >980mg/l – 48hrs

Algae – 397mg/ml – 72hrs

NOEC: Algae – 100mg/ml – 72hrs

Persistence and degradability: Readily biodegradable

Bioaccumulative potential: low Pow: ≤ 4 (Bioaccumulation not expected)

Mobility in soil: no data available

PBT and vPvB assessment: Not considered to be persistent, bioaccumulating nor toxic (PBT)

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose waste material in accordance with all federal, state and local environmental regulation.

For contaminated packing too dispose of as unused product in accordance with all federal, state and local environmental regulation.

For surplus and non-recyclable solution, offer to a licensed disposal company.

Observe all federal, state and local environmental regulations.

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SECTION 14: TRANSPORT INFORMATION

DOT (US)

Not dangerous products.

IMDG

Not dangerous products.

IATA

Not dangerous products.

SECTION 15: REGULATORY INFORMATION

International inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

OSHA Hazards

Irritant

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulation, Part 372.

SARA 311/312 Hazards Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

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Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

Massachusetts Right to Know Components

No components are subject to the Massachusetts Right to Know Act.

U.S. State Regulations**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

U.S. EPA Label Information**EPA Pesticide Registration Number**

Not regulated.

SECTION 16: OTHER INFORMATION

The information contained in this MSDS relates only to the material(s) designed and does not relate to use(s) in combination with any other material, process(es) and /or chemical reaction(s). Vivantis Technologies Sdn. Bhd. provides this information in good faith, from sources believed to be accurate; however, Vivantis assumes no liability for its accuracy or completeness, and thus shall not be held liable for any damage resulting from handling or from contact with the above product.

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