SAFETY DATA SHEET

Classified as hazardous in accordance with the criteria of EPA New Zealand

Section 1 - Identification

Product Identifier

Product Name **Phosphorus HR TNT Reagent B**

CAS No 7775-27-1

Recommended Use Laboratory chemicals.
Uses advised against No Information available

Product Code	**TNT844B**
Address	Thermo Fisher Scientific New Zealand Ltd 244 Bush Road, Albany, Auckland, New Zealand
Emergency Tel.	**CHEMTREC®** **09 980 6780 or +64 9 980 6780**
Telephone / Fax Numbers	Tel: 09 980 6700 Fax: 09 980 6788
E-mail address	ANZinfo@thermofisher.com

Section 2 - Hazard(s) Identification

Classification under Work Safe New Zealand

Classified as hazardous in accordance with the criteria of EPA New Zealand

HSNO Approval Number **HSR002596**

GHS Classification

Physical hazards

Substances/mixtures corrosive to metal	Category 1

Health hazards

Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1

Environmental hazards

Label Elements

Signal Word **Danger**

Hazard Statements
H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage

Precautionary Statements
Prevention
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing should not be allowed out of the workplace
P280 - Wear protective gloves/protective clothing/eye protection/face protection
Response
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P304 + P340 - IF INHALED: Remove person to fresh air and keep 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
P330 - Rinse mouth
P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
P337 + P313 - If eye irritation persists: Get medical advice/attention
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
P362 + P364 - Take off contaminated clothing and wash it before reuse
Storage
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed
Disposal
P501 - Dispose of contents/ container to an approved waste disposal plant

Other hazards which do not result in classification
This product does not contain any known or suspected endocrine disruptors

Section 3 - Composition and Information on Ingredients

Component	CAS No	Weight %
Tartaric acid (d, l)	87-69-4	<0.1
Sulfuric acid	7664-93-9	10-20
Hexaammonium molybdate	12027-67-7	1-5
Antimonate(2-), bis[.mu.-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-, dipotassium, stereoisomer	11071-15-1	<0.1

Section 4 - First Aid Measures

Description of first aid measures

New Zealand Emergency Tel. CHEMTREC®
09 980 6780 or +64 9 980 6780

Inhalation Remove to fresh air. Get medical attention. If not breathing, give artificial respiration.

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Self-Protection of the First Aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.
First Aid Facilities	Eyewash, safety shower and washroom.
Most important symptoms and effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated
Notes to Physician	Treat symptomatically.

Section 5 - Fire Fighting Measures

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

Extinguishing media which must not be used for safety reasons
No information available.

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products
Sulfur oxides, Hydrogen sulfide (H2S), Ammonia.

Special protective equipment and precautions for fire fighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

Section 6 - Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Emergency procedures
Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes or clothing.

Environmental Precautions
See Section 12 for additional Ecological Information.

Methods for Containment and Clean Up
Keep combustibles (wood, paper, oil, etc) away from spilled material. Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal. Soak up with inert absorbent material.

Precautions to prevent secondary hazards
Clean contaminated objects and areas thoroughly observing environmental regulations

Reference to Other Sections
Refer to protective measures listed in Sections 8 and 13.

Section 7 - Handling and Storage

Precautions for Safe Handling

Advice on safe handling
Wear personal protective equipment/face protection. Use only with adequate ventilation. Keep away from clothing and other combustible materials. Avoid dust formation. Avoid contact with skin and eyes. Do not breathe dust. Do not ingest. If swallowed then seek immediate medical assistance. Keep containers dry and tightly closed to avoid moisture absorption and contamination.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Keep away from acids. Protect from moisture.

Incompatible Materials
Strong oxidizing agents. Acids. Bases.

AS/NZS 2243.10:2004, Safety in laboratories - Storage of chemicals

Section 8 - Exposure Controls and Personal Protection

Control parameters

Exposure limits
UK - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.
AUS - Exposure Standards for Atmospheric Contaminants in the Occupational Environment - Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:3008(1995)]
Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)] updated in August, 2005. Safe Work Australia
NZ - Workplace Exposure Standards and Biological Exposure Indices (6th edition). New Zealand Department of Labor
ACGIH - Threshold Limit Values - Ceiling (TLV-C) guidelines by the American Conference of Governmental Industrial Hygienists (ACGIH) for controlling worker exposure to airborne chemical concentrations in the workplace.

Component	New Zealand WEL	Australia	ACGIH TLV	The United Kingdom
Sulfuric acid	TWA: 0.1 mg/m³	STEL: 3 mg/m³ TWA: 1 mg/m³	TWA: 0.2 mg/m³	STEL: 0.15 mg/m³ 15 min TWA: 0.05 mg/m³ 8 hr
Hexaammonium molybdate		TWA: 5 mg/m³	TWA: 0.5 mg/m³	STEL: 10 mg/m³ 15 min TWA: 5 mg/m³ 8 hr
Antimonate(2-), bis[.mu.-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-, dipotassium, stereoisomer		TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	STEL: 1.5 mg/m³ 15 min TWA: 0.5 mg/m³ 8 hr

Biological limit values
This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

Appropriate engineering controls

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Individual protection measures, such as personal protective equipment

Eye Protection — Goggles (Australian/New Zealand Standard AS/NZS 1337 - Eye protectors for Industrial applications)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	AUS/NZ Standard	Glove comments
Natural rubber, Nitrile rubber, Neoprene, PVC.	See manufacturers recommendations	-	AS/NZS 2161	(minimum requirement)

Inspect gloves before use.
Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)
Ensure gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.
Remove gloves with care avoiding skin contamination.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Repiratory Protection Use an AS/NZS 1716 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained in line with AS/NZS 1715 on the use and maintenance of repiratory protective devices

Recommended Filter type: Particulates filter conforming to EN 143 (or AUS/NZ equivalent)

Recommended half mask:- Particle filtering: EN149:2001 (or AUS/NZ equivalent)
When RPE is used a face piece Fit Test should be conducted

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls No information available.

Section 9 - Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State Liquid

Appearance Colorless
Odor Odorless
Odor Threshold No data available
pH No data available
Melting Point/Range No data available
Softening Point No data available
Boiling Point/Range Similar to water
Flammability (liquid) No data available
Flammability (solid,gas) No information available
Explosion Limits No data available

Flash Point No information available **Method -** No information available
Autoignition Temperature Not applicable
Decomposition Temperature No data available
Viscosity Not applicable Solid
Water Solubility No information available
Solubility in other solvents No information available
Partition Coefficient (n-octanol/water)

Component	log Pow
Tartaric acid (d, l)	-1.7

Vapor Pressure <3.55 kPa @ 20 °C
Density / Specific Gravity 1.11
Bulk Density No data available
Vapor Density Not applicable Solid
Particle characteristics Not applicable (liquid)

Other information

Evaporation Rate 1.25 (Water = 1) - Solid

Section 10 - Stability and Reactivity

Reactivity There are no known reactivity hazards associated with this product

Stability Stable under normal conditions.

Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions No information available.

Conditions to Avoid Incompatible products, Excess heat, Avoid dust formation, Exposure to moisture, Combustible material.

Incompatible Materials Strong oxidizing agents, Acids, Bases.

Hazardous Decomposition Products Sulfur oxides. Hydrogen sulfide (H2S). Ammonia.

Section 11 - Toxicological Information

Acute Effects

Information on likely routes of exposure

Product Information

Inhalation Irritating to respiratory system. May be harmful if inhaled. May cause allergic respiratory reaction.

Eyes Irritating to eyes.

Skin Irritating to skin. May be harmful in contact with skin. May cause sensitization by skin contact.

Ingestion Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Numerical measures of toxicity

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met

Dermal Based on available data, the classification criteria are not met

Inhalation Based on available data, the classification criteria are not met

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Tartaric acid (d, l)		LD50 > 2000 mg/kg (Rat)	
Sulfuric acid	2140 mg/kg (Rat)		LC50 = 0.375 mg/L (Rat) 4 h
Hexaammonium molybdate	LD50 = 333 mg/kg (Rat)	LD50 > 2000 mg/kg (Rat)	LC50 > 5.1 mg/L (Rat) 4 h

(b) skin corrosion/irritation; Category 1 B

(c) serious eye damage/irritation; Category 1

(d) respiratory or skin sensitization;

Respiratory No data available
Skin No data available

Sensitization No information available

(e) germ cell mutagenicity; Based on available data, the classification criteria are not met

(f) carcinogenicity; Based on available data, the classification criteria are not met

There are no known carcinogenic chemicals in this product

Component	New Zealand	Australia	New South Wales	Western Australia	IARC	EU	UK	Germany
Sulfuric acid	Confirmed carcinogen				Group 1			

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; Based on available data, the classification criteria are not met

Target Organs None known.

(j) aspiration hazard; No data available

Other Adverse Effects The toxicological properties have not been fully investigated.

Symptoms / effects,both acute and delayed
Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated.

Section 12 - Ecological Information

Ecotoxicity

Aquatic ecotoxicity Do not empty into drains. .

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Tartaric acid (d, l)	-	EC50=230 mg/L 48h	-	-
Sulfuric acid	LC50: > 500 mg/L, 96h static (Brachydanio rerio)	EC50: 29 mg/L/24h	-	-

Terrestrial ecotoxicity There is no data for this product

Persistence and Degradability

Persistence Soluble in water, Persistence is unlikely, based on information available.

Degradability Not relevant for inorganic substances.

Bioaccumulative Potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
Tartaric acid (d, l)	-1.7	No data available

Mobility The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

Other adverse effects

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors
Persistent Organic Pollutant This product does not contain any known or suspected substance
Ozone Depletion Potential This product does not contain any known or suspected substance

Section 13 - Disposal Considerations

Waste treatment methods

Waste from Residues/Unused Products Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Wastes, including emptied containers, are controlled wastes and should be disposed of in accordance with all federal, E.P.A., state and local regulations. Assure conformity with all applicable regulations.

Contaminated Packaging Dispose of this container to hazardous or special waste collection point.

Other Information Disposal agencies or waste contractors must comply with the New Zealand Hazardous Substances (Disposal) Regulations . Waste codes should be assigned by the user based on the application for which the product was used. Do not empty into drains.

Section 14 - Transport Information

Component	Hazchem Code
Sulfuric acid 7664-93-9 (10-20)	2P 4WE 2W 2R
Antimonate(2-), bis[.mu.-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-, dipotassium, stereoisomer 11071-15-1 (<0.1)	2Z

NZS 5433:2020

UN-No UN3316
Proper Shipping Name CHEMICAL KIT
Hazard Class 9
Packing Group II

IATA

UN-No UN3316
Proper Shipping Name CHEMICAL KIT
Hazard Class 9
Packing Group II

IMDG/IMO

UN-No UN3316
Proper Shipping Name CHEMICAL KIT
Hazard Class 9
Packing Group II

Environmental hazards	No hazards identified
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable, packaged goods
Special Precautions	No special precautions required. Please refer to the applicable dangerous goods regulations for additional information.
Additional information	None known

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

HSNO Approval Number	HSR002596

National Regulations
There are no applicable tolerable exposure limits or environmental exposure limits according to the EPA Controls for Hazardous Substances

Certified handlers, tracking and controlled substance license requirements
Certified handlers are required for some substances. This includes substances requiring a controlled substance license, and most explosives, vertebrates toxic agents, and certain fumigants. Acutely toxic substances which are a Category 1 or 2, such as pesticides also require Certified handlers. Please check the Health and Safety at Work Act 2015 for further information. Tracking is required for some highly hazardous substances. These substances need to be under the control of an appropriately trained person or appropriately secured. Please check the Health and Safety at Work Act 2015 for further information.

Prohibition or notification/licensing requirements
Shown below are details of specific prohibition/notifications or licencing requirements when they apply.

Component	New Zealand
Sulfuric acid	Confirmed carcinogen

International Regulations

Ozone Depletion Potential	This product does not contain any known or suspected substance
Persistent Organic Pollutant	This product does not contain any known or suspected substance
Rotterdam Convention (PIC)	Not applicable

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Sulfuric acid	-	Use restricted. See item 75. (see link for restriction details)	-
Hexaammonium molybdate	-	Use restricted. See item 65. (see link for restriction details)	-
Antimonate(2-), bis[.mu.-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-, dipotassium, stereoisomer	-	Use restricted. See item 75. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

International Inventories

New Zealand (NZIoC), Australia (AICS), Europe (EINECS/ELINCS/NLP), Korea (KECL), China (IECSC), Taiwan (TCSI), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	NZIoC	AICS	EINECS	ELINCS	NLP	KECL	IECSC	TCSI
Tartaric acid (d, l)	87-69-4	X	X	201-766-0	-	-	KE-10801	X	X
Sulfuric acid	7664-93-9	X	X	231-639-5	-	-	KE-32570	X	X
Hexaammonium molybdate	12027-67-7	X	X	234-722-4	-	-	KE-18391	X	X
Antimonate(2-), bis[.mu.-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-, dipotassium, stereoisomer	11071-15-1	X	X	234-293-3	-	-	-	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	PICCS	ISHL	ENCS
Tartaric acid (d, l)	87-69-4	X	ACTIVE	X	-	X	X	X
Sulfuric acid	7664-93-9	X	ACTIVE	X	-	X	X	X
Hexaammonium molybdate	12027-67-7	X	ACTIVE	X	-	X	X	X
Antimonate(2-), bis[.mu.-[2,3-dihydroxybutanedioato(4-)-O1,O2:O3,O4]]di-, dipotassium, stereoisomer	11071-15-1	X	ACTIVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed **KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

Section 16 - Other Information

This safety data sheet complies with the requirements of the EPA Hazardous Substances (Hazard Classification) Notice 2020 and WorkSafe New Zealand Regulations

Legend

NZIoC - New Zealand Inventory of Chemicals
AICS - Australian Inventory of Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
ENCS - Japanese Existing and New Chemical Substances
IECSC - Chinese Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
CAS - Chemical Abstracts Service
TWA - Time Weighted Average
ACGIH - American Conference of Governmental Industrial Hygienists
IARC - International Agency for Research on Cancer
PNEC - Predicted No Effect Concentration
NZS 5433:2020 - Transport of Dangerous Goods on Land
OECD - Organisation for Economic Co-operation and Development
ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
MARPOL - International Convention for the Prevention of Pollution from Ships
ADG - Australian Code for the Transport of Dangerous Goods by Road and Rail
LD50 - Lethal Dose 50%
LC50 - Lethal Concentration 50%
EC50 - Effective Concentration 50%
ATE - Acute Toxicity Estimate
WEL - Workplace Exposure Limit
RPE - Respiratory Protective Equipment
DNEL - Derived No Effect Level
NOEC - No Observed Effect Concentration
POW - Partition coefficient Octanol:Water
BCF - Bioconcentration factor
vPvB - very Persistent, very Bioaccumulative
PBT - Persistent, Bioaccumulative, Toxic
VOC - (Volatile Organic Compound)

Key literature references and sources for data
HSNO classifications provided in the New Zealand Chemical Classification Information Database (CCID).
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS
EPA Guide to classifying hazardous substances in New Zealand
EPA - Assigning a product to an existing HSNO approval guide

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.
Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit

and standards.
First aid for chemical exposure, including the use of eye wash and safety showers.

Revision Date	14-Jul-2023
Revision Summary	Update to GHS format

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet