



SAFETY DATA SHEET TRICALCIUM PHOSPHATE REVISION 5, DATE 21 SEP 22

1. IDENTIFICATION

Product Name	Tricalcium Phosphate
Other Names	Calcium hydroxide phosphate; Calcium phosphate, tribasic; Pentacalcium hydroxide tris(orthophosphate) [CAS#12167-74-7]; TRI-CAFOS 250
Uses	Food additive.
Chemical Family	No Data Available
Chemical Formula	Ca ₅ (OH)(PO ₄) ₃
Chemical Name	Hydroxylapatite
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust)

Not Scheduled

Redox Ltd
Corporate Office Sydney
Locked Bag 15 Minto NSW 2566 Australia
2 Swettenham Road Minto NSW 2566 Australia
All Deliveries: 4 Holmes Road Minto NSW 2566 Australia

Phone +61 2 9733 3000
Fax +61 2 9733 3111
E-mail sydney@redox.com
Web www.redox.com
ABN 92 000 762 345

Australia
Adelaide
Brisbane
Melbourne
Perth
Sydney

New Zealand
Auckland
Christchurch
Hawke's Bay
UK
London

Malaysia
Kuala Lumpur
USA
Los Angeles
Oakland
Mexico
Saltillo



Globally Harmonised System

Hazard Classification	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Signal Word	None

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
---------------------------------------	---

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	NOT hazardous according to the criteria of Safe Work Australia under Model WHS Regulations
------------------------------	--

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Tricalcium phosphate	(Ca ₅ (OH)(PO ₄) ₃)	1306-06-5	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth thoroughly, then drink plenty of water. Do not induce vomiting. Keep respiratory tract clear. Do not give milk or alcoholic beverages. Get medical advice/attention. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Protect unharmed eye! Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically. Do not leave the victim unattended. Show this safety data sheet (SDS) to the doctor in attendance.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	Non-combustible.
Extinguishing Media	If material is involved in a fire, use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Fire and Explosion Hazard	Decomposes on heating, emitting toxic fumes.
Hazardous Products of Combustion	Fire may produce irritating and/or toxic gases, including oxides of Calcium and Phosphorus.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Do not touch or walk through spilled material. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	Sweep up and shovel. Keep in suitable, closed containers for reclamation or disposal (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent dust cloud. Prevent entry into waterways, sewers, basements or confined areas.
Decontamination	Clean contaminated floors and objects thoroughly while observing environmental regulations.
Environmental Precautionary Measures	Prevent entry into drains and waterways. Local authorities should be advised if significant spillages cannot be contained.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from moisture. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards: - Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m ³ (measured as inhalable dust). - New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m ³ ; TWA = 3 mg/m ³ (respirable dust).
Exposure Limits	No Data Available

Biological Limits	No information available.
Engineering Measures	Use process enclosures, local exhaust ventilation, or others engineering controls to keep airborne levels below recommend exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection Equipment	<ul style="list-style-type: none"> - Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Dust mask/particulate respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses. - Hand protection: Handle with gloves. Recommended: Protective gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Long-sleeved clothing; Protective suit.
Special Hazards Precautions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face thoroughly after handling and before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Powder
Odour	Odourless
Colour	White
pH	5.0 - 8.0 10 % (20 °C)
Vapour Pressure	No Data Available
Relative Vapour Density	6.8 Air = 1
Boiling Point	No Data Available
Melting Point	1,100 - 1,700 °C
Freezing Point	No Data Available
Solubility	Insoluble in water
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	Not volatile (butyl acetate = 1)
Bulk Density	150 - 500 kg/m3 (20 °C)
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	3.140 g/cm3
Specific Heat	No Data Available
Molecular Weight	502.31 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available

Additional Characteristics	No information available.
Potential for Dust Explosion	Not expected to form explosive dust-air mixtures.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible.
Reactions That Release Gases or Vapours	Decomposes on heating, emitting toxic fumes, including oxides of Calcium and Phosphorus.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	Hazardous reactions are not expected under normal conditions of storage and use.
Chemical Stability	The product is stable under normal handling and storage conditions.
Conditions to Avoid	Avoid generating dust. Protect from moisture. Keep away from heat.
Materials to Avoid	Incompatible/reactive with strong oxidizing agents, trimethylol propane or trimethylol propane derived products, strong acids.
Hazardous Decomposition Products	Decomposes on heating, emitting toxic fumes, including oxides of Calcium and Phosphorus.
Hazardous Polymerisation	Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<ul style="list-style-type: none">- Acute toxicity: Not classified based on available information. Ingestion of large quantities may cause nausea, vomiting, cramps and diarrhoea.- Skin corrosion/irritation: Not classified based on available information. May cause skin irritation.- Serious eye damage/irritation: Not classified based on available information. May cause eye irritation.- Respiratory sensitisation: Not classified based on available information.- Skin sensitisation: Not classified based on available information.- Germ cell mutagenicity: Not classified based on available information.- Carcinogenicity: Not classified based on available information.- Reproductive toxicity: Not classified based on available information.- STOT (single exposure): Not classified based on available information. May cause respiratory tract irritation, coughing, sneezing and laboured breathing.- STOT (repeated exposure): Not classified based on available information.- Aspiration toxicity: Not classified based on available information.
Acute	
Ingestion	Acute toxicity (Oral): - LD50, Rat: >25,350 mg/kg [Supplier's SDS].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available.
Persistence/Degradability	Inorganic substance.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of wastes in an approved waste disposal facility and in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Contaminated packaging: Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	Tricalcium Phosphate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	Tricalcium Phosphate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	Tricalcium Phosphate
----------------------	----------------------

SAFETY DATA SHEET TRICALCIUM PHOSPHATE REVISION 5, DATE 21 SEP 22

Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Tricalcium Phosphate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Tricalcium Phosphate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Tricalcium Phosphate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification

NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information

No Data Available

Poisons Schedule (Aust)

Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code

Not Hazardous

National/Regional Inventories

Australia (AIC)

Listed

Canada (DSL)

Listed

Canada (NDSL)

Not Listed

China (IECSC)

Listed

Europe (EINECS)

215-145-7
235-330-6

Europe (REACH)

Listed

Japan (ENCS/METI)

1-183

Korea (KECI)

KE-20608

Malaysia (EHS Register)

Exempt

New Zealand (NZIoC)

Listed

Philippines (PICCS)

Listed

Switzerland (Giftliste 1)

Not Determined

Switzerland (Inventory of Notified Substances)

Not Determined

Taiwan (NCSR)

Listed

USA (TSCA)

Listed

16. OTHER INFORMATION

Related Product Codes

CAPHOS1031, CAPHOS1032, CAPHOS1037, CAPHOS1040, CAPHOS1041, CAPHOS1050, CAPHOS1080, CAPHOS1081, TRCAPH1000, TRCAPH1001, TRCAPH1002, TRCAPH1100, TRCAPH1101, TRCAPH1200, TRCAPH1201, TRCAPH1202, TRCAPH1230, TRCAPH1240, TRCAPH1300, TRCAPH1400, TRCAPH1500, TRCAPH2000, TRCAPH3000, TRCAPH3001, TRCAPH3002, TRCAPH3010, TRCAPH3301, TRCAPH3415, TRCAPH3600, TRCAPH3615, TRCAPH4000, TRCAPH4001,

SAFETY DATA SHEET TRICALCIUM PHOSPHATE REVISION 5, DATE 21 SEP 22

TRCAPH4500, TRCAPH4700, TRCAPH4730, TRCAPH4731, TRCAPH5000, TRCAPH5100, TRCAPH5200, TRCAPH5201, TRCAPH5301, TRCAPH5304, TRCAPH5500, TRCAPH5600, TRCAPH5620, TRCAPH5630, TRCAPH6000, TRCAPH6500, TRCAPH7000, TRCAPH7001, TRCAPH7100, TRCAPH7101, TRCAPH7102, TRCAPH8000, TRCAPH8001, TRCAPH8002, TRCAPH8003, TRCAPH8200, TRCAPH8300, TRCAPH9300, TRCAPH9400, TRCAPO0010, TRCAPO0025, TRCAPO0052, TRCAPO1000, TRCAPO1001, TRCAPO1002, TRCAPO1003, TRCAPO1004, TRCAPO1005, TRCAPO1006, TRCAPO1007, TRCAPO1008, TRCAPO1009, TRCAPO1010, TRCAPO1011, TRCAPO1012, TRCAPO1013, TRCAPO1014, TRCAPO1015, TRCAPO1016, TRCAPO1017, TRCAPO1018, TRCAPO1019, TRCAPO1020, TRCAPO1021, TRCAPO1022, TRCAPO1023, TRCAPO1024, TRCAPO1025, TRCAPO1100, TRCAPO1200, TRCAPO1300, TRCAPO1400, TRCAPO1500, TRCAPO1600, TRCAPO1700, TRCAPO2000, TRCAPO2001, TRCAPO2100, TRCAPO2101, TRCAPO2200, TRCAPO2300, TRCAPO2400, TRCAPO2500, TRCAPO2600, TRCAPO2700, TRCAPO2800, TRCAPO3000, TRCAPO3100, TRCAPO3101, TRCAPO3200, TRCAPO3201, TRCAPO3300, TRCAPO3301, TRCAPO3302, TRCAPO3400, TRCAPO3401, TRCAPO3500, TRCAPO3501, TRCAPO3600, TRCAPO3601, TRCAPO3800, TRCAPO3900, TRCAPO4000, TRCAPO4100, TRCAPO4200, TRCAPO4300, TRCAPO4400, TRCAPO4500, TRCAPO4501, TRCAPO4600, TRCAPO4700, TRCAPO4800, TRCAPO4900, TRCAPO4901, TRCAPO5000, TRCAPO5001, TRCAPO5100, TRCAPO5200, TRCAPO5300, TRCAPO5400, TRCAPO5500, TRCAPO5600, TRCAPO5900, TRCAPO5901, TRCAPO5902, TRCAPO5903, TRCAPO5904, TRCAPO5905, TRCAPO5906, TRCAPO5907, TRCAPO5908, TRCAPO6000, TRCAPO6100, TRCAPO6200, TRCAPO6300, TRCAPO6400, TRCAPO7000, TRCAPO7002, TRCAPO7010, TRCAPO8002, TRCAPO8004

Revision

5

Revision Date

21 Sep 2022

Key/Legend

< Less Than

> Greater Than

AICS Australian Inventory of Chemical Substances

atm Atmosphere

CAS Chemical Abstracts Service (Registry Number)

cm² Square Centimetres

CO₂ Carbon Dioxide

COD Chemical Oxygen Demand

deg C (°C) Degrees Celcius

EPA (New Zealand) Environmental Protection Authority of New Zealand

deg F (°F) Degrees Farenheit

g Grams

g/cm³ Grams per Cubic Centimetre

g/l Grams per Litre

HSNO Hazardous Substance and New Organism

IDLH Immediately Dangerous to Life and Health

immiscible Liquids are insoluable in each other.

inHg Inch of Mercury

inH₂O Inch of Water

K Kelvin

kg Kilogram

kg/m³ Kilograms per Cubic Metre

lb Pound

LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

ltr or L Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Health and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight