SAFETY DATA SHEET

Section 1 - Identification

Product Name **JM-21 Multi-element Oil Based Standard, Specpure®, 900µg/g**

Product Code	**36769**
Address	ThermoFisher Scientific Australia Pty Ltd 5 Caribbean Drive, Scoresby VICTORIA 3179, Australia
Emergency Tel.	**CHEMTREC®** **03 9757 4559 or +613 9757 4559**
Telephone / Fax Numbers	Tel: 1300 735 292 Fax: 1800 067 639
E-mail address	ANZinfo@thermofisher.com

Recommended Use Laboratory chemicals.

Uses advised against This product contains one or more substance(s) on the Illicit Drug Precursors/Reagents list. Verify requirements related to using, handling and storing these substances. This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction. This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern.

Section 2 - Hazard(s) Identification

Classification under Safe Work Australia

Classified as not hazardous according to criteria of Safe Work Australia.

Physical hazards
No hazards identified

Health hazards
No hazards identified

Environmental hazards
No hazards identified

Label Elements None required

Other information

Section 3 - Composition and Information on Ingredients

Component	CAS No	Weight %
White mineral oil	8042-47-5	98.11
Zinc	7440-66-6	0.09
Vanadium	7440-62-2	0.09
Titanium	7440-32-6	0.09
Tin	7440-31-5	0.09
Sodium	7440-23-5	0.09
Silver	7440-22-4	0.09
Silicon	7440-21-3	0.09
Phosphorus	7723-14-0	0.09
Nickel	7440-02-0	0.09
Molybdenum	7439-98-7	0.09
Manganese	7439-96-5	0.09
Magnesium	7439-95-4	0.09
Lead	7439-92-1	0.09
Iron	7439-89-6	0.09
Copper	7440-50-8	0.09
Chromium	7440-47-3	0.09
Calcium	7440-70-2	0.09
Cadmium	7440-43-9	0.09
Boron	7440-42-8	0.09
Barium	7440-39-3	0.09
Aluminum	7429-90-5	0.09

Section 4 - First Aid Measures

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur.

Ingestion Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Self-Protection of the First Aider No special precautions required.

First Aid Facilities Eyewash, safety shower and washroom.

Most important symptoms and effects None reasonably foreseeable.

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.

Hazardous Decomposition Products
Metal oxides, Heavy metal oxides.

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

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.

Section 6 - Accidental Release Measures

Emergency procedures
Ensure adequate ventilation. Use personal protective equipment as required.

Environmental Precautions
Should not be released into the environment. Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up

Clean-up methods - small spillage
Sweep up and shovel into suitable containers for disposal.

Clean-up methods - large spillage
Not applicable, packaged goods.

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

Section 7 - Handling and Storage

Precautions for Safe Handling
Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation.

Conditions for Safe Storage, Including any Incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

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

Section 8 - Exposure Controls and Personal Protection

Exposure limits
DE - MAK and BAT values of Hazardous Chemical Compounds in the Work Area. Published by German Research Foundation on July 1, 2011 **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 **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. **UK** - EH40/2005 Work Exposure Limits, Fourth edition. Published 2020.

Component	Australia	New Zealand WEL	ACGIH TLV	The United Kingdom	Germany
White mineral oil					TWA: 5 mg/m³ (8 Stunden). AGW - exposure factor 4 TWA: 5 mg/m³ (8 Stunden). MAK Höhepunkt: 20 mg/m³
Zinc					TWA: 0.1 mg/m³ (8 Stunden). MAK TWA: 2 mg/m³ (8 Stunden). MAK

					Höhepunkt: 0.4 mg/m³ Höhepunkt: 4 mg/m³
Tin	TWA: 2 mg/m³	TWA: 2 mg/m³	TWA: 2 mg/m³	STEL: 4 mg/m³ 15 min TWA: 2 mg/m³ 8 hr	
Silver	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³	STEL: 0.3 mg/m³ 15 min TWA: 0.1 mg/m³ 8 hr	TWA: 0.1 mg/m³ (8 Stunden). AGW - exposure factor 8 TWA: 0.1 mg/m³ (8 Stunden). MAK Höhepunkt: 0.8 mg/m³
Silicon	TWA: 10 mg/m³	TWA: 10 mg/m³		STEL: 30 ppm 15 min STEL: 12 mg/m³ 15 min TWA: 10 mg/m³ 8 hr TWA: 4 mg/m³ 8 hr	
Phosphorus	TWA: 0.1 mg/m³	TWA: 0.1 mg/m³			TWA: 0.01 mg/m³ (8 Stunden). MAK Höhepunkt: 0.02 mg/m³
Nickel	TWA: 1 mg/m³	TWA: 0.005 mg/m³	TWA: 1.5 mg/m³	STEL: 1.5 mg/m³ 15 min TWA: 0.5 mg/m³ 8 hr Skin	TWA: 0.03 mg/m³ (8 Stunden). AGW - exposure factor 8 TWA: 0.006 mg/m³ (8 Stunden). AGW - exposure factor 8
Molybdenum	TWA: 10 mg/m³	TWA: 10 mg/m³	TWA: 10 mg/m³ TWA: 3 mg/m³	STEL: 20 mg/m³ 15 min TWA: 10 mg/m³ 8 hr	
Manganese	STEL: 3 mg/m³ TWA: 1 mg/m³	TWA: 0.2 mg/m³ TWA: 0.02 mg/m³	TWA: 0.02 mg/m³ TWA: 0.1 mg/m³	STEL: 0.6 mg/m³ 15 min STEL: 0.15 mg/m³ 15 min TWA: 0.2 mg/m³ 8 hr TWA: 0.05 mg/m³ 8 hr	TWA: 0.2 mg/m³ (8 Stunden). AGW - exposure factor 8 TWA: 0.02 mg/m³ (8 Stunden). AGW - exposure factor 8 TWA: 0.2 mg/m³ (8 Stunden). MAK TWA: 0.02 mg/m³ (8 Stunden). MAK Höhepunkt: 1.6 mg/m³ Höhepunkt: 0.16 mg/m³
Lead	TWA: 0.05 mg/m³	TWA: 0.05 mg/m³	TWA: 0.05 mg/m³	STEL: 0.45 mg/m³ 15 min TWA: 0.15 mg/m³ 8 hr	TWA: 0.004 mg/m³ (8 Stunden). MAK Höhepunkt: 0.032 mg/m³
Copper	TWA: 1 mg/m³ TWA: 0.2 mg/m³	TWA: 0.01 mg/m³	TWA: 0.2 mg/m³	STEL: 0.6 mg/m³ 15 min STEL: 2 mg/m³ 15 min TWA: 1 mg/m³ 8 hr TWA: 0.2 mg/m³ 8 hr	TWA: 0.01 mg/m³ (8 Stunden). MAK Höhepunkt: 0.02 mg/m³
Chromium	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	STEL: 1.5 mg/m³ 15 min TWA: 0.5 mg/m³ 8 hr	TWA: 2 mg/m³ (8 Stunden). AGW - exposure factor 1
Cadmium	TWA: 0.01 mg/m³	TWA: 0.004 mg/m³	TWA: 0.01 mg/m³ TWA: 0.002 mg/m³	STEL: 0.075 mg/m³ 15 min TWA: 0.025 mg/m³ 8 hr Carc. metal	TWA: 0.002 mg/m³ (8 Stunden). AGW - exposure factor 8 TWA: 0.002 mg/m³ (8 Stunden). AGW - Haut
Boron					TWA: 0.75 mg/m³ (8 Stunden). MAK
Barium	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³	TWA: 0.5 mg/m³		
Aluminum	TWA: 10 mg/m³ TWA: 5 mg/m³	TWA: 10 mg/m³	TWA: 1 mg/m³	STEL: 30 mg/m³ 15 min STEL: 12 mg/m³ 15 min TWA: 10 mg/m³ 8 hr TWA: 4 mg/m³ 8 hr	TWA: 1.25 mg/m³ (8 Stunden). AGW - exposure factor 2 TWA: 10 mg/m³ (8 Stunden). AGW - exposure factor 2 TWA: 4 mg/m³ (8 Stunden). MAK TWA: 1.5 mg/m³ (8 Stunden). MAK

Biological limit values

NZ - Substances assigned Biological Exposure Indices in the New Zealand Workplace Exposure Standards and Biological

Exposure Indices (6th edition). New Zealand Department of Labor

Component	Australia	New Zealand	European Union	United Kingdom	Germany
Lead		3 µg/dL (blood) not critical (Lead) 0.14 µmol/L (blood) not critical (Lead) 0.48 µmol/L (blood) not critical (Lead) 10 µg/dL (blood) not critical (Lead)			Lead: 150 µg/L whole blood (no restriction)
Cadmium		2 µg/g creatinine (urine) not critical (Cadmium)			
Aluminum					Aluminum: 50 µg/g Creatinine urine (for long-term exposures: at the end of the shift after several shifts)

Exposure Controls
Engineering Measures
None under normal use conditions.

Personal protective equipment

Eye Protection Wear safety glasses with side shields (or 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
Nitrile rubber	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 Long sleeved clothing

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: Particle filter (or AUS/NZ equivalent)

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

Appearance Amber
Physical State Liquid

Odor Petroleum distillates

Odor Threshold	No data available	
pH	Not applicable	
Melting Point/Range	No data available	
Softening Point	No data available	
Boiling Point/Range	> 315 °C / 599 °F	
Flash Point	> 232 °C / > 449.6 °F	**Method -** No information available
Evaporation Rate	No data available	
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	No data available	
Vapor Pressure	No data available	
Vapor Density	No data available	(Air = 1.0)
Specific Gravity / Density	0.75 g/cm3	@ 20 °C
Bulk Density	Not applicable	Liquid
Water Solubility	Immiscible	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Component	**log Pow**	
White mineral oil	6	
Autoignition Temperature	351 °C / 663.8 °F	
Decomposition Temperature	No data available	
Viscosity	No data available	
Explosive Properties	No information available	
Oxidizing Properties	No information available	

Other information

Section 10 - Stability and Reactivity

Reactivity None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Heat, flames and sparks.

Incompatible Materials None known.

Hazardous Decomposition Products Metal oxides. Heavy metal oxides.

Hazardous Polymerization No information available.

Section 11 - Toxicological Information

Information on Toxicological Effects

Product Information

(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

Toxicology data for the components

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
White mineral oil	>5000 mg/kg (Rat)	>3000 mg/kg (Rabbit)	
Zinc	LD50 = 630 mg/kg (Rat)		
Vanadium	LD50 > 2000 mg/kg (Rat)		

Tin	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rat)	LC50 > 4.75 mg/L (Rat) 4 h
Silver	> 2000 mg/kg (Rat)	LD50 > 2000 mg/kg (rat)	LC50 > 5.16 mg/L (Rat) 4 h
Silicon	LD50 = 3160 mg/kg (Rat)		
Phosphorus	>15000 mg/kg (Rat Female)		LC50 = 4.3 mg/L (Rat) 1 h
Nickel	LD50 > 9000 mg/kg (Rat)		LC50 > 10.2 mg/L (Rat) 1 h
Molybdenum		LD50 > 2000 mg/kg (Rat)	LC50 > 5.84 mg/L (Rat) 4 h
Manganese	LD50 = 9 g/kg (Rat)		LC50 > 5.14 mg/L (Rat) 4 h
Magnesium	LD50 = 230 mg/kg (Rat)		
Iron	7500 mg/kg (Rat)		
Copper			LC50 > 5.11 mg/L (Rat) 4 h
Cadmium	LD50 = 2330 mg/kg (Rat)		LC50 = 25 mg/m^3 (Rat) 30 min
Boron	LD50 > 2000 mg/kg (Rat) (OCED 423)		LC50 > 5.08 mg/L (Rat) 4 h
Barium	LD50 = 132 mg/kg (Rat)		
Aluminum			LC50 > 0.888 mg/L (Rat) 4 h

(b) skin corrosion/irritation; No data available

(c) serious eye damage/irritation; No data available

(d) respiratory or skin sensitization;

Respiratory No data available

Skin No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	Australia	New Zealand	New South Wales	Western Australia	IARC	EU	UK	Germany
Vanadium								Cat. 2
Nickel		Suspected carcinogen			Group 2B			Cat. 1
Lead		Suspected carcinogen			Group 2A			
Cadmium		Confirmed carcinogen			Group 1	Carc Cat. 1B		Cat. 1

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

Target Organs None known.

(j) aspiration hazard; No data available

Symptoms / effects,both acute and delayed No information available

Section 12 - Ecological Information

Ecotoxicity effects May cause long-term adverse effects in the environment. Do not allow material to contaminate ground water system.

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
White mineral oil	LC50: > 10000 mg/L, 96h (Lepomis macrochirus)			
Zinc	LC50: = 0.41 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 0.59 mg/L, 96h semi-static (Oncorhynchus mykiss) LC50: 2.16 - 3.05 mg/L, 96h flow-through (Pimephales promelas) LC50: 0.211 - 0.269 mg/L, 96h semi-static (Pimephales promelas) LC50: = 2.66 mg/L, 96h static (Pimephales promelas) LC50: = 30 mg/L, 96h (Cyprinus carpio) LC50: = 0.45 mg/L, 96h semi-static (Cyprinus carpio) LC50: = 7.8 mg/L, 96h static (Cyprinus carpio) LC50: = 0.24 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: = 3.5 mg/L, 96h static (Lepomis macrochirus)	EC50: 0.139 - 0.908 mg/L, 48h Static (Daphnia magna)	EC50: 0.11 - 0.271 mg/L, 96h static (Pseudokirchneriella subcapitata) EC50: 0.09 - 0.125 mg/L, 72h static (Pseudokirchneriella subcapitata)	
Silver	LC50: = 0.064 mg/L, 96h static (Lepomis macrochirus) LC50: = 0.0062 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 0.00155 - 0.00293 mg/L, 96h static (Pimephales promelas)	EC50: = 0.00024 mg/L, 48h Static (Daphnia magna)		
Phosphorus	LC50: 33.2 mg/L/96h (Danio rerio)	EC50: 10.5 mg/L/48h		
Nickel	LC50: > 100 mg/L, 96h (Brachydanio rerio) LC50: = 1.3 mg/L, 96h semi-static (Cyprinus carpio) LC50: = 10.4 mg/L, 96h static (Cyprinus carpio)	EC50 = 510 µg/L 96h	EC50 = 0.1 mg/L 72h EC50 = 0.18 mg/L 72h	
Manganese	LC50: > 3.6 mg/L, 96h semi-static (Oncorhynchus mykiss)			
Lead	LC50: = 1.32 mg/L, 96h	EC50: = 600 µg/L, 48h		

	static (Oncorhynchus mykiss) LC50: = 1.17 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: = 0.44 mg/L, 96h semi-static (Cyprinus carpio)	(water flea)		
Copper	Onchorhynchys mykiss: LC50=0.15 mg/L 96h Cuprinus carpio: LC50=0.8 mg/L 96h	EC50: = 0.03 mg/L, 48h Static (Daphnia magna)	0.0426-0.0535 mg/L EC50 72 h 0.031-0.054 mg/L EC50 96 h	
Cadmium	LC50: 0.0004 - 0.003 mg/L, 96h (Pimephales promelas) LC50: = 0.016 mg/L, 96h (Oryzias latipes) LC50: = 21.1 mg/L, 96h flow-through (Lepomis macrochirus) LC50: = 0.24 mg/L, 96h static (Cyprinus carpio) LC50: = 4.26 mg/L, 96h semi-static (Cyprinus carpio) LC50: = 0.002 mg/L, 96h (Cyprinus carpio) LC50: = 0.006 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 0.003 mg/L, 96h flow-through (Oncorhynchus mykiss)	EC50: = 0.0244 mg/L, 48h Static (Daphnia magna)		
Barium	LC50: > 500 mg/L/96h (Cyprinodon variegatus)			

Persistence and Degradability Product contains heavy metals. Discharge into the environment must be avoided. Special pre-treatment is necessary

Persistence May persist.

Degradation in sewage treatment plant Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Bioaccumulative Potential Product has a high potential to bioconcentrate

Component	log Pow	Bioconcentration factor (BCF)
White mineral oil	6	No data available
Phosphorus		<200 dimensionless
Chromium		1.03 - 1.22

Mobility Spillage unlikely to penetrate soil. The product is insoluble and floats on water. Is not likely mobile in the environment due its low water solubility Is not likely mobile in the environment due its low water solubility and propensity to bind to soil particles

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 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 Empty remaining contents. Dispose of in accordance with local regulations. Do not re-use empty containers.

Other Information Chemical wastes should be disposed through a licensed commercial waste collection

service.

Section 14 - Transport Information

IMDG/IMO Not regulated

Component	IMDG Marine Pollutant
Copper 7440-50-8 (0.09)	IMDG regulated marine pollutant (Listed in the index, listed under Copper metal powder)

ADG Not regulated

Component	Hazchem Code
Zinc 7440-66-6 (0.09)	4Y 4W
Titanium 7440-32-6 (0.09)	1Y 1Z 4Y
Sodium 7440-23-5 (0.09)	4W
Silicon 7440-21-3 (0.09)	1Z
Phosphorus 7723-14-0 (0.09)	1WE 1Z
Magnesium 7439-95-4 (0.09)	1Z 4Y 4W
Calcium 7440-70-2 (0.09)	4W
Barium 7440-39-3 (0.09)	4W
Aluminum 7429-90-5 (0.09)	4Y 4W

IATA Not regulated

Environmental hazards No hazards identified

Special Precautions No special precautions required

Additional information None known

Section 15 - Regulatory Information

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

National Regulations **Australia**

See section 8 for national exposure control parameters.

Component	Health Surveillance
Cadmium 7440-43-9 (0.09)	Listed Demographic, medical and occupational history Health advice, including counseling on the effect of smoking on Cadmium exposure Physical examination with emphasis on the respiratory system Records of personal exposure Standard respiratory questionnaire to be completed

	Standardised respiratory function test, for example, FEV1, FVC and FEV1/FVC Urinary cadmium and .beta.2-Microglobulin

Standard for the Uniform Scheduling of Medicines and Poisons
Classified as a scheduled poison according to the Standard for Uniform Scheduling of Medicines and Poisons.

Component	Standard for the Uniform Scheduling of Medicines and Poisons
Silver - 7440-22-4	Schedule 2 listed
Lead - 7439-92-1	Schedule 4 listed - in human therapeutic use
Boron - 7440-42-8	Schedule 4 listed - for human therapeutic use except: in preparations for internal use containing <=6 mg Boron per recommended daily dose, in preparations for dermal use containing <=0.35% of Boron, which are not for paediatric or antifungal use, or when present as an excipient

Australian Industrial Chemicals Introduction Scheme (AICIS)

Component	Australian Industrial Chemicals Introduction Scheme (AICIS)	Additional information
White mineral oil - 8042-47-5	Present	-
Zinc - 7440-66-6	Present	-
Vanadium - 7440-62-2	Present	-
Titanium - 7440-32-6	Present	-
Tin - 7440-31-5	Present	-
Sodium - 7440-23-5	Present	-
Silver - 7440-22-4	Present	-
Silicon - 7440-21-3	Present	-
Phosphorus - 7723-14-0	Present	-
Nickel - 7440-02-0	Present	-
Molybdenum - 7439-98-7	Present	-
Manganese - 7439-96-5	Present	-
Magnesium - 7439-95-4	Present	-
Lead - 7439-92-1	Present	-
Iron - 7439-89-6	Present	-
Copper - 7440-50-8	Present	-
Chromium - 7440-47-3	Present	-
Calcium - 7440-70-2	Present	-
Cadmium - 7440-43-9	Present	-
Boron - 7440-42-8	Present	-
Barium - 7440-39-3	Present	-
Aluminum - 7429-90-5	Present	-

Australian - Illicit Drug Precursors/Reagents Substance List
This product contains one or more substance(s) on the Illicit Drug Precursors/Reagents list. Verify requirements related to using, handling and storing these substances.

Chemicals of Security Concern
This product contains one or more substance(s) listed on the voluntary National Code of Practice for Chemicals of Security Concern

Component	Australian - Illicit Drug Precursors/Reagents Substance List	Chemicals of Security Concern
Sodium - 7440-23-5	Category 2	
Phosphorus - 7723-14-0	Category 1	Listed in Appendix A
Magnesium - 7439-95-4	Category 2	
Calcium - 7440-70-2	Category 2	

Legend
Category 1 - Chemicals that require an End User Declaration with each purchase and may only be sold to ‘account customers’ or customers that are prepared to open an account. Supply of these chemicals to End Users or Distributors must be delayed for a period of not less than 24 hours
Category 2 - Chemicals and apparatus that require an End User Declaration when sold to non-account customers

Chemicals of Security Concern - for further information see *http://www.chemicalsecurity.gov.au/securityconcerns*

National pollutant inventory Subject to reporting requirements

Component	National pollutant inventory
Zinc - 7440-66-6	10 tonne/yr. Threshold category 1
Phosphorus - 7723-14-0	3 tonne/yr. Threshold category 3 total
Nickel - 7440-02-0	10 tonne/yr. Threshold category 1 2000 tonne/yr. Threshold category 2b 60000 MWH. Threshold category 2b 20 MW. Threshold category 2b
Manganese - 7439-96-5	10 tonne/yr. Threshold category 1
Lead - 7439-92-1	10 tonne/yr. Threshold category 1 2000 tonne/yr. Threshold category 2b 60000 MWH. Threshold category 2b 20 MW. Threshold category 2b
Copper - 7440-50-8	10 tonne/yr. Threshold category 1 2000 tonne/yr. Threshold category 2b 60000 MWH. Threshold category 2b 20 MW. Threshold category 2b
Cadmium - 7440-43-9	10 tonne/yr. Threshold category 1 2000 tonne/yr. Threshold category 2b 60000 MWH. Threshold category 2b 20 MW. Threshold category 2b
Boron - 7440-42-8	10 tonne/yr. Threshold category 1

Prohibition or notification/licensing requirements

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

This product does not contain any substance(s) subject to Prohibition, Authorization or Restriction.

Component	Australia	New South Wales	Western Australia	New Zealand
Nickel - 7440-02-0				Suspected carcinogen
Lead - 7439-92-1				Suspected carcinogen
Cadmium - 7440-43-9				Confirmed carcinogen

International Inventories

Component	AICS	NZIoC	EINECS	ELINCS	TSCA	DSL	NDSL	PICCS	ENCS	ISHL	IECSC	KECL
White mineral oil	X	X	232-455-8	-	X	X	-	X	X	X	X	KE-35412
Zinc	X	X	231-175-3	-	X	X	-	X	X		X	KE-35518
Vanadium	X	X	231-171-1	-	X	X	-	X	X		X	KE-35266
Titanium	X	X	231-142-3	-	X	X	-	X	X		X	KE-33881
Tin	X	X	231-141-8	-	X	X	-	X	X		X	KE-33838
Sodium	X	X	231-132-9	-	X	X	-	X	X	X	X	KE-31338
Silver	X	X	231-131-3	-	X	X	-	X	X		X	KE-31261
Silicon	X	X	231-130-8	-	X	X	-	X	X		X	KE-31029
Phosphorus	X	X	231-768-7	-	X	X	-	X	X		X	KE-28713
Nickel	X	X	231-111-4	-	X	X	-	X	X		X	KE-25818
Molybdenum	X	X	231-107-2	-	X	X	-	X	X		X	KE-25427
Manganese	X	X	231-105-1	-	X	X	-	X	X		X	KE-22999
Magnesium	X	X	231-104-6	-	X	X	-	X	X		X	KE-22673
Lead	X	X	231-100-4	-	X	X	-	X	X		X	KE-21887
Iron	X	X	231-096-4	-	X	X	-	X	X		X	KE-21059
Copper	X	X	231-159-6	-	X	X	-	X	X		X	KE-08896
Chromium	X	X	231-157-5	-	X	X	-	X	X		X	KE-05970
Calcium	X	X	231-179-5	-	X	X	-	X	X		X	KE-04462
Cadmium	X	X	231-152-8	-	X	X	-	X	X		X	KE-04397
Boron	X	X	231-151-2	-	X	X	-	X	X		X	KE-03518
Barium	X	X	231-149-1	-	X	X	-	X	X		X	KE-02022
Aluminum	X	X	231-072-3	-	X	X	-	X	X		X	KE-00881

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

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

MARPOL - International Convention for the Prevention of Pollution from Ships

Component	IMDG Marine Pollutant
Copper - 7440-50-8	IMDG regulated marine pollutant (Listed in the index, listed under Copper metal powder)

Basel convention on the control of transboundary movements of hazardous wastes and their dispoal
Take note that wastes may be subject to export, import, or transit controls pursuant to the Basel convention and/or local regulations implementing the Basel convention.

Component	Basel Convention (Hazardous Waste)	Australian Hazardous Waste Act - Categories of Wastes to Be Controlled
Lead - 7439-92-1	Annex I - Y31	Y31
Cadmium - 7440-43-9	Annex I - Y26	Y26

Component	CAS No	OECD HPV	Restriction of Hazardous Substances (RoHS)	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
White mineral oil	8042-47-5	Listed	Not applicable	Not applicable	Not applicable
Zinc	7440-66-6	Listed	Not applicable	Not applicable	Not applicable
Vanadium	7440-62-2	Listed	Not applicable	Not applicable	Not applicable
Titanium	7440-32-6	Listed	Not applicable	Not applicable	Not applicable
Tin	7440-31-5	Listed	Not applicable	Not applicable	Not applicable
Sodium	7440-23-5	Listed	Not applicable	Not applicable	Not applicable
Silver	7440-22-4	Listed	Not applicable	Not applicable	Not applicable
Silicon	7440-21-3	Listed	Not applicable	Not applicable	Not applicable
Phosphorus	7723-14-0	Listed	Not applicable	Not applicable	Not applicable
Nickel	7440-02-0	Listed	Not applicable	Not applicable	Not applicable
Molybdenum	7439-98-7	Listed	Not applicable	Not applicable	Not applicable
Manganese	7439-96-5	Listed	Not applicable	Not applicable	Not applicable
Magnesium	7439-95-4	Listed	Not applicable	Not applicable	Not applicable
Lead	7439-92-1	Listed	0.1% (Max. Conc.)	Not applicable	Not applicable
Iron	7439-89-6	Listed	Not applicable	Not applicable	Not applicable
Copper	7440-50-8	Listed	Not applicable	Not applicable	Not applicable
Chromium	7440-47-3	Listed	Not applicable	Not applicable	Not applicable
Calcium	7440-70-2	Listed	Not applicable	Not applicable	Not applicable
Cadmium	7440-43-9	Listed	0.01% (Max. Conc.)	Not applicable	Not applicable
Boron	7440-42-8	Listed	Not applicable	Not applicable	Not applicable
Barium	7440-39-3	Not applicable	Not applicable	Not applicable	Not applicable
Aluminum	7429-90-5	Listed	Not applicable	Not applicable	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)
Zinc	-	Use restricted. See item 75. (see link for restriction details)	-
Tin	-	Use restricted. See item 75. (see link for restriction details)	-

Sodium	-	Use restricted. See item 75. (see link for restriction details)	-
Silver	-	Use restricted. See item 75. (see link for restriction details)	-
Phosphorus	-	Use restricted. See item 75. (see link for restriction details)	-
Nickel	-	Use restricted. See item 27. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	-
Lead	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 63. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 231-100-4 - Toxic for reproduction (Article 57c)
Copper	-	Use restricted. See item 75. (see link for restriction details)	-
Chromium	-	Use restricted. See item 75. (see link for restriction details)	-
Cadmium	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 23. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 231-152-8 - Carcinogenic, Article 57a;Specific target organ toxicity after repeated exposure, Article 57(f) - human health
Barium	-	Use restricted. See item 75. (see link for restriction details)	-
Aluminum	-	Use restricted. See item 75. (see link for restriction details)	-

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

Section 16 - Other Information

Legend

AICS - Australian Inventory of Chemical Substances
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
IECSC - Chinese Inventory of Existing Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
TWA - Time Weighted Average
IARC - International Agency for Research on Cancer
ICAO/IATA - International Civil Aviation Organization/International Air Transport Association
MARPOL - International Convention for the Prevention of Pollution from Ships
NZS 5433:2012 - Transport of Dangerous Goods on Land
LD50 - Lethal Dose 50%
EC50 - Effective Concentration 50%
WEL - Workplace Exposure Limit
DNEL - Derived No Effect Level
POW - Partition coefficient Octanol:Water
vPvB - very Persistent, very Bioaccumulative
VOC - (Volatile Organic Compound)
NZIoC - New Zealand Inventory of Chemicals
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japanese Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
CAS - Chemical Abstracts Service
ACGIH - American Conference of Governmental Industrial Hygienists Predicted No Effect Concentration (PNEC)
IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code
ADG Australian Code for the Transport of Dangerous Goods by Road and Rail
OECD - Organisation for Economic Co-operation and Development
LC50 - Lethal Concentration 50%
ATE - Acute Toxicity Estimate
RPE - Respiratory Protective Equipment
NOEC - No Observed Effect Concentration
BCF - Bioconcentration factor
PBT - Persistent, Bioaccumulative, Toxic

Key literature references and sources for data
https://echa.europa.eu/information-on-chemicals
Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Physical hazards	On basis of test data
Health Hazards	Calculation method
Environmental hazards	Calculation method

Training Advice
Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Revision Date	19-Nov-2022
Revision Summary	Not applicable.

This Safety Data Sheet (SDS) is prepared in accordance to and complies with the requirements of Safe Work Australia - Work Health and Safety Regulations (WHS Regulations).

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