SAFETY DATA SHEET

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **STAINLESS STEEL POWDER**

Synonyms AMPS STAINLESS STEEL POWDER

1.2 Uses and uses advised against

Uses CHEMICAL APPLICATIONS ● INDUSTRIAL APPLICATIONS ● METALLURGY APPLICATIONS ● SURFACE COATING

1.3 Details of the supplier of the product

Supplier name **AUSTRALIAN METAL POWDERS SUPPLIES PTY LTD**

Address 32 Carrington Road, Guildford, NSW, 2161, AUSTRALIA

Telephone (02) 9681 6155

Email sales@metalpowders.com.au

Website http://www.metalpowders.com.au

1.4 Emergency telephone numbers

Emergency 13 11 26 (Poisons Information Centre)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

Physical Hazards

Not classified as a Physical Hazard

Health Hazards

Skin Sensitisation: Category 1
Carcinogenicity: Category 2
Specific Target Organ Toxicity (Repeated Exposure): Category 1

Environmental Hazards

Not classified as an Environmental Hazard

2.2 GHS Label elements

Signal word **DANGER**

Pictograms

Hazard statements

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.

Prevention statements

P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing should not be allowed out of the workplace.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response statements

P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P321	Specific treatment is advised - see first aid instructions.
P363	Wash contaminated clothing before reuse.

Storage statements

P405	Store locked up.

Disposal statements

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
IRON	7439-89-6	231-096-4	Remainder
CHROMIUM	7440-47-3	231-157-5	10 to 37%
NICKEL	7440-02-0	231-111-4	8 to 25%
COPPER	7440-50-8	231-159-6	<4%
SILICON	7440-21-3	231-130-8	<4%
MANGANESE	7439-96-5	231-105-1	<3%
BORON	7440-42-8	231-151-2	<2%
MOLYBDENUM	7439-98-7	231-107-2	<4%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
Skin	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poisons Information Centre on 13 11 26 (Australia Wide) or a doctor (at once).
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are generally associated with chronic exposure (i.e. lung fibrosis). May cause an allergic skin reaction.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic nickel oxides when heated to decomposition. Very finely divided nickel metal in the fully reduced state can smoulder in the presence of oxygen or air. Dust may be explosive at high concentrations and/or in confined areas. Prevent contamination of drains and waterways, absorb runoff with sand or similar.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. If stored in bulk, minimise dust generation by dampening with water or covering with a tarp or similar. If stored in packages, ensure packages are adequately labelled, and check regularly for leaks or spills.

7.3 Specific end uses

No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Borates, anhydrous	SWA [AUS]	--	1	--	--
Chromium Metal	SWA [AUS]	--	0.5	--	--
Copper (fume)	SWA [AUS]	--	0.2	--	--
Copper (fume, dusts & mists)	SWA [Proposed]	--	0.01	--	--
Copper, dusts & mists (as Cu)	SWA [AUS]	--	1	--	--
Iron oxide fume (Fe2O3) (as Fe)	SWA [AUS]	--	5	--	--
Iron salts, soluble, as Fe	SWA [AUS]	--	1	--	--
Manganese, dust & compounds (as Mn)	SWA [AUS]	--	1	--	--
Manganese, fume (as Mn)	SWA [AUS]	--	1	--	3
Molybdenum, insoluble compounds (as Mo)	SWA [AUS]	--	10	--	--
Molybdenum, soluble compounds (as Mo)	SWA [AUS]	--	5	--	--
Nickel, metal	SWA [AUS]	--	1	--	--
Nickel, soluble compounds (as Ni)	SWA [AUS]	--	0.1	--	--
Silicon	SWA [AUS]	--	10	--	--

Biological limits

Ingredient	Determinant	Sampling Time	BEI
CHROMIUM	Total chromium in urine	End of shift at end of workweek	25 µg/L
	Total chromium in urine	Increase during shift	10 µg/L

Reference: ACGIH Biological Exposure Indices

8.2 Exposure controls

Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust / fume levels below the recommended exposure standard.

PPE

Eye / Face Wear dust-proof goggles.

Hands Wear PVC or rubber gloves.

Body Wear coveralls.

Respiratory Where an inhalation risk exists, wear a Class P2 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	GREY TO SILVER COLOURED POWDER
Odour	SLIGHT ODOUR
Flammability	NON FLAMMABLE
Flash point	NOT RELEVANT
Boiling point	NOT AVAILABLE
Melting point	1535°C (Iron)
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	2.40 to 2.60
Solubility (water)	INSOLUBLE

9.1 Information on basic physical and chemical properties

Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT RELEVANT
Lower explosion limit	NOT RELEVANT
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive properties	NOT AVAILABLE
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

10. STABILITY AND REACTIVITY

10.1 Reactivity

Nickel is attacked slowly by sulphuric or dilute hydrochloric acid; it is readily attacked by nitric acid. Evolving highly flammable hydrogen gas. Under special conditions nickel can react with carbon monoxide in reducing atmospheres to form Nickel Carbonyl, a toxic gas. Very finely divided nickel in the fully reduced state can smoulder in the presence of oxygen or air.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid).

10.6 Hazardous decomposition products

May evolve toxic nickel oxides when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity No reliable data available for nickel. Oral LD50 (rat) is expected to be > 9000 mg/kg.

Information available for the ingredients:

Ingredient	Oral LD50	Dermal LD50	Inhalation LC50
IRON	30000 mg/kg (rat)	--	--
CHROMIUM	> 5000 mg/kg (rat)	--	> 5.41 mg/L/4hrs (rat)
COPPER	--	> 2000 mg/kg (rat)	--
MANGANESE	9000 mg/kg (rat)	--	> 5.14 mg/L/4hrs (rat)
BORON	650 mg/kg (rat)	--	--

Skin No relevant or reliable human studies were identified for skin irritation. Nickel metal is not a chemical irritant.

Eye No relevant or reliable human studies were identified for eye irritation. Nickel metal is not a chemical irritant.

Sensitisation Sufficient data from human studies exists to warrant classification of nickel as a dermal sensitiser. The available data is not considered sufficient for classification as a respiratory sensitiser.

Mutagenicity Insufficient data available to classify as a mutagen.

Carcinogenicity Nickel metal is allocated a GHS Classification of 'Category 2 - Suspected Carcinogen'. Nickel, metallic and alloys are classified as possibly carcinogenic to humans (IARC Group 2B). These classifications are based on the lack of human evidence of carcinogenicity, but the presence of positive results for tumor induction in animals after injection or intratracheal instillation. A recent animal inhalation study was negative for carcinogenicity (Oller et al. 2008).

Reproductive Metallic nickel is not classified as a reproductive or developmental toxicant.

STOT - single exposure No relevant or reliable studies were identified.

STOT - repeated Repeated exposure to nickel metal via inhalation may produce respiratory irritation and degeneration in

exposure humans (particles under 0.1mm diameter). Prolonged exposure via inhalation to high concentrations may result in lung fibrosis.

Aspiration Not relevant.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Metallic nickel is harmful to aquatic life with long lasting effects. Aquatic toxicity classification relates to particle sizes less than 1 mm diameter (equivalent spherical diameter).

12.2 Persistence and degradability

Not applicable for inorganic substances.

12.3 Bioaccumulative potential

In general, nickel bioaccumulation is relatively low and nickel does not become magnified along food chain.

12.4 Mobility in soil

Nickel mobility in soil is dependent on many parameters including pH, and naturally occurring silica and hydrous oxides of iron and manganese.

12.5 Other adverse effects

No information provided.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal Reuse where possible, or return to the manufacturer or supplier. Alternatively, dispose of to an approved landfill site. Contact the manufacturer/supplier for additional information (if required).

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	None allocated.	None allocated.	None allocated.
14.2 Proper Shipping Name	None allocated.	None allocated.	None allocated.
14.3 Transport hazard class	None allocated.	None allocated.	None allocated.
14.4 Packing Group	None allocated.	None allocated.	None allocated.

14.5 Environmental hazards

Not a Marine Pollutant

14.6 Special precautions for user

Hazchem code None allocated.

15. REGULATORY INFORMATION

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

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

Inventory listings **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information

NICKEL EXPOSURE 1: NIOSH (USA) recommend that workers exposed to Nickel and inorganic nickel compounds should have an initial medical exam covering: 1 - Comprehensive medical and work history with emphasis on skin conditions, allergies, upper and lower respiratory tract illnesses and smoking. 2 - Complete physical exam with emphasis on upper respiratory tract and skin. 3 - Specific clinical tests such as X-ray, pulmonary function and indicated sputum cytology and urine nickel analysis.

NICKEL: Reported and potential adverse health effects associated with occupational exposure to Nickel metal and inorganic compounds include; an increased risk of nasal, lung and possibly laryngeal cancer in nickel refinery workers; increased risk of gastric cancer; increased risk of sarcoma (cancer arising from connective tissue); severe irritation of the upper respiratory tract; pulmonary irritation and fibrosis; pneumoconiosis; bronchial asthma; increased susceptibility to respiratory infections; dermatitis and skin sensitisation.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as form of product, method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: form of product; frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report status

This document has been compiled by RMT on behalf of the manufacturer, importer or supplier of the product and serves as their Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer, importer or supplier or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer, importer or supplier.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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