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REVISION N <sup>o</sup> : 1		
ISSUED DATE: <b>01 October 2021</b>	WORK PROCEDURE TASK	<b>SAFETY DATA SHEET – NICKEL POWDER</b>
	SECTION:	NICKEL
	DOCUMENT N <sup>o</sup> :	<b>SDS-003</b>

**DISTRIBUTION CONTROL SHEET**

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**Product code** : Not applicable  
**Version** : 1  
**Date of issue** : 01/10/2021  
**Date of previous issue** : No previous validation

**SECTION 1: Identification of the substance / mixture and of the company / undertaking**

**1.1. Product Identifier**

**Product name** : Nickel Powder  
**Synonyms** : Nickel Metal Powder, 994 Nickel Powder, Impala Nickel Powder  
**EC number** : Not applicable  
**UK (GB) REACH Registration number** : Not applicable  
**Legal Identity** : Not Applicable  
**CAS number** : Not applicable  
**Product code** : Not applicable  
**Product type** : Not applicable  
**Other means of identification** : Not applicable

**1.2. Relevant identified uses of the substance or mixture and uses advised against**  
**Specific uses**

Catalyst, Printing Industry, Metal Alloys, Nickel Plating, Ceramic Manufacture, Process Chemical, Industrial Application, Steel Manufacturing.

**1.3. Details of the supplier of the safety data sheet**

**Supplier Name** : Impala Platinum Ltd – Refineries  
**Address** : Base Metals Refinery  
 P.O. Box 222  
 SPRINGS  
 1560  
 GAUTENG  
 Republic of South Africa  
  
**Contact Person (s)** : Element Coordinator – Org Langenhoven  
 Tel: +27 11 360 3176  
 E-mail: [georg.langenhoven@implats.co.za](mailto:georg.langenhoven@implats.co.za)  
  
 : Nickel Section Manager – Sakhumzi Ndlebe  
 Tel: +27 11 360 3317  
 E-mail: [Sakhumzi.ndlebe@implats.co.za](mailto:Sakhumzi.ndlebe@implats.co.za)

**1.4. Emergency telephone number**

For emergency information – see above for Impala Platinum contacts.  
 South Africa Poisons Information Centre (24 hours) 0861-555-777 (South Africa only)

## SECTION 2: Hazard Identification

### 2.1. Classification of the substance or mixture GHS Classification (sans 10234)

#### Health Hazard:

Acute toxicity, oral	Category 4	H301	May be harmful if swallowed
Respiratory sensitisation	Category 1	H333	May be harmful if inhaled
Skin sensitisation	Category 1	H317	Prolonged skin contact may cause an allergic reaction
Carcinogenicity	Category 2	H351	Limited evidence of carcinogenic effect
Specific target organ Toxicity (RE)	Category 1	H372	Causes damage to organs through prolonged or repeated exposure

#### Environmental Hazard:

Category 3	H413	May cause long lasting harmful effects in aquatic life
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### 2.2. Label elements

#### Hazard Pictograms



#### Signal word

DANGER

#### Precautionary statements

##### Prevention

- : P201 Obtain special instructions before use.
- : P202 Do not handle until all safety precautions have been read and understood.
- P261 Avoid breathing dust/fume
- P264 Wash thoroughly after handling
- P270 Do not eat, drink or smoke when using this product
- P272 Contaminated work clothes must not be allowed out of the workplace
- P273 Avoid release to the environment
- P280 Wear protective gloves, protective clothing and eye protection
- P285 In case of inadequate ventilation wear respiratory protection

#### Response

- : P330 Rinse mouth
- P101 + P312 IF SWALLOWED: Call a poison centre/doctor
- P302 + P352 IF ON SKIN: Wash well with plenty of soap and water
- P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position 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.
- P308 + P313 If exposed or concerned get medical advice/attention
- P311 + P342 If experiencing respiratory symptoms call a poison centre or doctor

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P321	Specific treatment is advised – see first aid instructions
P333 + P313	If skin irritation or rash occurs get medical advice/attention
P337 + P313	If eye irritation persists get medical advice/attention
P363	Wash contaminated clothing before reuse

<b>Storage</b>	:	P405 Stored locked up
<b>Disposal</b>	:	P501–Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Supplemental label elements</b>	:	Not applicable.

## SECTION 3: Composition / Information on Ingredients

### 3.1. Substances

Ingredient	:	Nickel
Formula	:	Ni
CAS N <sup>o</sup>	:	7440-02-0
Poison Sched	:	None Allocated
Conc.	:	≥99.80%
RTECS N <sup>o</sup>	:	QR5950000
EC No	:	231-111-4
ICSC N	:	0062

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

<b>Eye contact</b>	:	Flush gently with running water for minimum 15 minutes. Seek medical attention if irritation develops.
<b>Inhalation</b>	:	If over exposure occurs leave exposure area immediately. If other than minor symptoms are displayed seek immediate medical attention. Apply artificial respiration if not breathing.
<b>Skin contact</b>	:	Remove contaminated clothing and gently flush affected areas with soap and water. Seek medical attention if irritation develops. Launder clothing before reuse. Maintain good personal hygiene.
<b>Ingestion</b>	:	If poisoning occurs, contact a Doctor or South Africa Poisons Information Centre (24 hours): 0861-555-777 (South Africa only). Do not induce vomiting. Seek immediate medical attention.

#### 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. May cause allergy or asthma or breathing difficulties if inhaled.

#### Immediate medical attention and special treatment needed

Treat symptomatically.

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## SECTION 5: Firefighting measures

### 5.1. Fire Fighting

Flash Point	:	Not applicable
Flammable Limits	:	Not applicable
Auto-ignition Point	:	Not applicable
Fire Extinguishing Media	:	Use an extinguishing agent suitable for a surrounding fire.
Special Fire Fighting Procedures	:	Non-flammable. No fire or explosion hazard exists. May evolve toxic gases (Nickel oxide if heated to decomposition).
Hazardous Chemical Code	:	Non allocated

Note: May cause fire or explosion with incompatible materials (see Reactivity section 10.2). Evacuate area and contact emergency services. Remain upwind and notify those downwind of the hazard. Wear full protective equipment, including self-contained Breathing apparatus (SCBA) when combating fire. Bund water to prevent contamination of drains.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**Personal precautions** : Wear PPE as detailed in section 8 of this SDS.

### 6.2. Environmental precautions

**Environmental precautions** : Prevent product from entering drains and waterways.

### 6.3. Methods and material for containment and cleaning up

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

## SECTION 7: Handling and Storage

### 7.1. Precautions for safe handling

#### Protective measures /

**Packing material/ Handling** : Before use, read the product label. Use safe work practices to avoid eye or skin contact and inhalation. Observe good personal hygiene. Prohibit eating, drinking and smoking in contaminated areas (e.g. if container is damaged). Wash hands before eating or smoking.

### 7.2. Conditions for safe storage, including any incompatibilities

Store in cool, dry, well ventilated area, removed from oxidising agents (e.g. hypochlorites), acids (sulfuric acid), heat sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Large storage areas should have appropriate ventilation systems.

### 7.3. Specific end use(s)

Sintered Briquettes	Packed in black 250kg drums and loaded in 1000kg lots on a pallet. Each drum sealed with a security seal.
Un-Sintered Briquettes	Packed in bags and loaded in 1000kg lots on a pallet.
Air-Sintered Briquettes	Packed in bags and loaded in 1000kg lots on a pallet.
Bulk product	Emptied into a tipper/truck directly from feed bin

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## SECTION 8: Exposure controls / personal protection

### 8.1. Control parameters

#### Occupational Exposure Limit:

	Exposure limit values
ICSC0062	Ni soluble = 0.1 mg/m <sup>3</sup> Ni insoluble = 0.2 mg/m <sup>3</sup> Ni metal = 1.5 mg/m <sup>3</sup>
SWA (AUS)	Ni Metal TWA 1 mg / m <sup>3</sup> Ni Soluble compounds (as Ni): TWA 0.1mg / m <sup>3</sup>
SA OHSAct	Ni soluble = 0.1 mg/m <sup>3</sup> Ni insoluble = 0.5 mg/m <sup>3</sup> Ni metal = 0.5 mg/m <sup>3</sup>

### 8.2. Exposure controls

<b>Respiratory protection</b>	:	Where an inhalation risk exists, wear a Class P2 (Particulate) respirator. At high dust levels, wear a Full-Face Class P3 (Particulate) or Powered Air Purifying Respirator (PAPR).
<b>Hand protection</b>	:	Wear PVC or rubber gloves..
<b>Eye protection</b>	:	Wear dust-proof goggles
<b>Skin protection</b>	:	Wear overalls. Do not take working clothes home.

## SECTION 9: Physical and chemical properties

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

### 9.1. Information on basic physical and chemical properties

<b>Appearance</b>	:	Grey/Silver Powder
<b>Odour</b>	:	Odourless
<b>Flammability (Solid, gs)</b>	:	Non-Flammable
<b>Flash Point</b>	:	Not relevant
<b>Lower Explosion Limit</b>	:	Not relevant
<b>Upper Explosion Limit</b>	:	Not relevant
<b>Auto Ignition Temperature</b>	:	Not relevant
<b>Boiling Point</b>	:	2730 °C
<b>Melting Point</b>	:	1455 °C
<b>Evaporation Rate</b>	:	Not relevant
<b>pH</b>	:	Not relevant
<b>%Volatiles</b>	:	Not relevant
<b>Specific Gravity</b>	:	8.90
<b>Vapour Pressure</b>	:	Not relevant
<b>Solubility (water)</b>	:	Insoluble
<b>Molecular Weight</b>	:	58.71g/mole
<b>Cu concentration</b>	:	≥99.80%

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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Stable under recommended conditions of storage.

### 10.2. Chemical stability

Stable under recommended conditions of storage.

### 10.3. Possibility of hazardous reactions

No reactions expected, except if exposed to incompatible materials – see section 10.5

### 10.4. Conditions to avoid

Avoid heat, sparks, open flames and other ignition sources (fine particles, <3µm, can combust when exposed to ignition sources), as well as incompatible materials (section 10.5)

### 10.5. Incompatible materials

May evolve flammable – explosive hydrogen gas in contact with strong acids. Incompatible with oxidising agents (e.g. hypochlorites, peroxide, ammonium nitrate) and acids (e.g. sulfuric acid, hydrochloric acid) reacts slowly with non-oxidising acids and more rapidly with oxidising acids. Also incompatible with nitrates, sulfur, selenium, Halogens, Halogen-Halogen Compounds, nitril compounds and organic solvents. Reacts violently in powder form with titanium powder and potassium perchlorate.

### 10.6. Hazardous decomposition products

May evolve toxic gases if heated to decomposition.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

<b>Eye:</b>	:	Irritant.
	:	Contact may result in lacrimation, irritation, pain redness and conjunctivitis.
	:	Prolonged contact – corneal burns and possible permanent damage.
<b>Acute Toxicity:</b>	:	No reliable data available for nickel.
	:	LD50 (Ingestion) for rat is expected to be >9 000mg/kg
<b>Skin Irritation:</b>	:	Slightly corrosive – irritant.
	:	Repeated contact may result in irritation, dermatitis with severe itching and possible sensitisation.
	:	A skin sensitiser. “Nickel itch” may begin with a burning and itching sensation, followed by redness and blister. Once acquired, nickel sensitivity usually persists.
	:	Nickel and its compounds can be absorbed through the skin, but not in amounts sufficient to cause intoxication.
	:	Individuals with pre-existing lung or skin sensitivities/diseases are advised to avoid exposure.
<b>Mutagenicity:</b>	:	Insufficient data available to classify as a mutagen.

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<b>Carcinogenicity:</b>	:	Nickel metal is allocated a GHS Classification of “ <b>Category 2 - Suspected Carcinogen</b> ”. Nickel, metallic and alloys are classified as possibly carcinogenic to humans) IARC Group 2B).
<b>Reproductive</b>	:	Insufficient data available to classify as a reproductive toxin.
<b>STOT – SE</b>	:	No relevant or reliable studies available. Ingestion may result in gastric irritation, ulceration and burns to the mouth and throat with nausea, vomiting and abdominal pain. Nickel is poorly absorbed through the stomach.
<b>STOT – SE</b>	:	Over exposure to dust may result in respiratory mucous membrane irritation and sensitisation.
	:	Early inhalation symptoms include nausea, giddiness, weakness, and non-productive cough, followed by breathing difficulties, pulmonary oedema and interstitial fibrosis.
	:	Half-life in the body: 667 days. Chronic exposure to nickel compounds may result in increased incidence of asthma and decreased pulmonary function.
	:	Nickel salts have been shown to cause an increased incidence of asthma and bronchitis, decreased pulmonary function.
	:	Nickel is poorly absorbed through the gastrointestinal tract, which accounts for its low toxicity via this route. Large doses, 1-3 mg/kg of nickel compounds have been reported to cause intestinal disorders, convulsions & asphyxia in dogs. Heart, brain, liver and kidney damage reported in animals.
<b>Aspiration:</b>	:	Not relevant.
<b>Sensitisation:</b>	:	Sufficient data from human studies exists to warrant classification of nickel as a dermal sensitiser via skin contact. The data availability is insufficient for classification of metallic nickel as a respiratory sensitiser.

**SECTION 12:Ecological information**

**13.1. Toxicity**

**Conclusion / Summary**

: Limited eco-toxicity data was available for this product at the time this report was prepared. Metallic nickel may be harmful to aquatic life with long lasting effects – Aquatic toxicity classification relates to particle sizes less than 1mm diameter (equivalent spherical diameter).

**13.2. Persistence and degradability**

**Conclusion / summary**

: Not applicable for inorganic substances.

### 13.3. Bioaccumulate potential

**Conclusion / summary** : No information available

### 13.4. Mobility in soil

**Mobility** : Nickel mobility in soil is dependent on many parameters, including pH, and naturally occurring silica and hydrous oxides of iron and manganese. Mobility of nickel is controlled by various sorbents which scavenge it from solution. In pristine environments, hydrous oxides of iron and manganese control its mobility via sorption and co-precipitation.

### 13.5. Other adverse effects

Nickel and nickel compounds are currently being researched at an International level for eco-toxicity and ecological effects, including bioavailability, partitioning partitioning properties and mobility of the various chemical forms of nickel.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Product Methods of disposal** : Collect and reuse where possible. Minimise dust generation. Contact Impala Refineries personnel for additional information – see section 1.3

**Legislation:** : Dispose of in accordance with relevant local legislation.

## SECTION 14: Transport information

### 14.1. UN number

ADR/RID	ADN	IMDG	IATA
N/A	N/A	N/A	N/A

**Not classified as a dangerous good  
Not regulated for Transport Purposes**

Packing: Not applicable  
 IMDG-Code: Not applicable  
 ICAO / IATA: Not applicable  
 RID / ADR: Not applicable

### 14.2. Other information

“Under US DOT only, DG 9, UN 3077 applies to nickel powders if they are < 100 micron in particle size, and if they are packaged in quantities greater than 100 pounds (0.05 metric tonne)”.

## SECTION 15:Regulatory information

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

**United States:** CERCLA Sections: 102a/103 (40 CFR 302.4); Nor regulated  
**Canada:** WHMIS Classification: D2B (tox material)  
**EU/EC Classification:** XN (Harmful), not classified in Annex I of Directive 67/548/EEC (will change with implementation of GHS/REACH).

### 15.2 Chemical Safety Assessment Regulation

EC no. 1907/2006 of the European Parliament and the Council of December 2006.

## SECTION 16:Other information

### Abbreviations and acronyms :

**mg/m<sup>3</sup> :** milligrams per cubic metre  
**ppm:** parts per million  
**TWA/ES:** Time Weighted Average of Exposure Standard  
**pH:** Relates to hydrogen ion concentration – this value will relate to a scale of 0-14, where 0 is highly acidic and 14 is highly alkaline.  
**CAS N<sup>o</sup>:** Chemical Abstract Service number – used to uniquely identify chemical compounds.  
**M:** Moles per litre, a unit of concentration.  
**IARC:** International Agency for Research on Cancer.  
**RTECS:** The Registry of Toxic Effects of Chemical Substances.  
**ICSC:** International Chemical Safety Card.  
**EC No:** European Commission Number  
**EU:** European Union  
**AUS:** Australia

**Health Effect from Exposure:** : It should be noted that the effects from exposure to this will depend on several factors including:  
 : 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 Chem Alert report which encompasses all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

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### Hazard information References:

RTECS: Registry of toxic effects of Chemical Substances, NIOSH, edition January 1999  
 Sax's Dangerous Properties of Industrial Material (8<sup>th</sup> edition), R J Lewis Sr.  
 Material Safety Data Sheet: Platinum Standard solution National Institute of Standards and Technology (USA) August 2006  
 Screening of Platinum Group Metals; Pt, Rh, Pd SWECO VIAK Screening Report 2007: 2 (For Swedish

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Environmental Protection Agency).  
 ECOTOX database, <http://cfpub.epa.gov/ecotox>  
 ENVIRONMENTAL HEALTH CRITERIA 125 Platinum WHO:  
<http://www.inchem.org/documents/ehc/ehc/ehc125.htm>

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