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REVISION N°.: 23  ORIGINAL DATE ISSUED: <27-JUN-2005  *LAST REVIEWED: 01 October 2021	<b>SAFETY DATA SHEET – COBALT POWDER</b>
	DOCUMENT N°.: <b>MAN-HDS-001</b>

**DISTRIBUTION CONTROL SHEET**

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**1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER**

**1.1 Product identifier**

**\*Product name** Cobalt Powder

**Synonym(s)** Cobalt Metal Powder, Impala Cobalt Powder, Cobalt ACGIH OSHA, Cobalt Metallic, Cobalt – 59, Kobalt (German), Super Cobalt.

**1.2 Uses and uses advised against**

**\*Use(s)** Process Reagent, Industrial Applications, Paint Additive, alloy manufacturer, flame spraying.

**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 Persons** *Element coordinator, hazardous chemical substances, BMR - Org Langenhoven*  
 Tel: +27 11 360 3176  
 E-mail: [georg.langenhoven@implats.co.za](mailto:georg.langenhoven@implats.co.za)

Nickel Manager – Sakhumzi Ndlebe  
 Tel: +27 11 360 3317  
 E-mail: [Sakhumzi.ndlebe@implats.co.za](mailto:Sakhumzi.ndlebe@implats.co.za)

**1.4 Emergency Contact telephone number(s)**

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

**2. HAZARDS IDENTIFICATION**

**2.1 Classification of the substance or mixture**

CLASSIFIED AS HAZARDOUS ACCORDING TO SANS 10234

<b>GHS Classification(s)</b> Acute toxicity, oral:	Category 4
Respiratory sensitisation:	Category 1
Skin sensitisation:	Category 1
Aquatic toxicity:	Category 4

**2.2 Label Elements:**

**Signal Word** DANGER

**Hazard Pictograms**



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<b>Health Statement(s)</b>	H301	Harmful if swallowed
	H317	May cause an allergic skin reaction
	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
	H413	May cause long lasting harmful effects to aquatic life
<b>Prevention statement(s)</b>	P201	Obtain special instruction 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 work place
	P273	Avoid release to the environment
	P280	Wear protective clothing, eye protection
	P285	In case of inadequate ventilation wear respiratory protection
<b>Response statement(s)</b>	P330	Rinse mouth
	P363	Wash contaminated clothing before reuse
	P101 + P312	IF SWALLOWED: Call a poison centre/doctor
	P302 + P352	IF ON SKIN: Wash well with plenty of soap and water
	P308 + P313	If exposed or concerned get medical advice/attention
	P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
	P342 + P311	If experiencing respiratory symptoms call a poison centre or doctor
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
	P337 + P313	If eye irritation persists get medical advice/attention
	P333 + P313	If skin irritation or rash occurs get medical advice/attention
<b>Storage statement(s)</b>	P405	Stored locked up
	P403 + P233	Store in a well ventilated place. Keep container tightly closed
<b>Disposal statement(s)</b>	P501	Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 **Other Hazards:**  
No information provided

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 **Substances/Mixtures**

<b>Ingredient</b>	Cobalt
<b>Formula</b>	Co
<b>CAS #</b>	7440-48-4
<b>Poison Schedule</b>	None Allocated
<b>Conc.</b>	≥99.80%
<b>RTECS#</b>	GF 8750000
<b>EC#</b>	231-158-0
<b>ICSC#</b>	0782

### 4. FIRST AID MEASURES

4.1 **Description of first aid measures**

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- Eye** Flush gently with running water for minimum 15 minutes. Seek medical attention if irritation develops. Keep patient calm
- Inhalation** 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.
- Skin** Remove contaminated clothing and gently flush affected areas with running water. Seek medical attention if irritation develops. Launder clothing before reuse. Maintain good personal hygiene standards.
- Ingestion** If poisoning occurs, contact a Doctor or Poisonous Information Centre (24 hours) 0861 555 777 (South Africa only). Do not induce vomiting. Seek immediate medical attention.

**First Aid Facilities** Eye wash and safety shower facilities should be available.

- 4.2 **Most important symptoms and effects, both acute and delayed**  
May cause an allergic skin reaction. May cause allergy or asthma or breathing difficulties if inhaled.
- 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 a surrounding fire.
- 5.2 **Special hazards arising from the substance or mixture**  
Non-flammable. Very fine dust (<3um) may burn when exposed to ignition sources or mixed with strong oxidising agent. May evolve toxic cobalt oxides when heated. May evolve explosive hydrogen gas on contact with water / acid.
- 5.3 **Advice for firefighters**  
Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment (see spillage section 6.1 below) including Self Contained Breathing Apparatus (SCBA) when combating fire. Use water fog to cool intact containers and nearby storage areas.
- 5.4 **Hazardous Chemical Code**  
None allocated.

## 6. ACCIDENTAL RELEASE MEASURES

- 6.1 **Personal precautions, protective equipment and emergency procedures**  
Wear PPE as detailed in section 8 of this SDS.
- 6.2 **Environmental precautions**  
Prevent product from entering drains and waterways.
- 6.3 **Methods of cleaning up**  
Contain spillage, and collect and place in suitable containers for disposal. Avoid generating dust.
- 6.4 **References to other sections**  
See sections 8 and 13 for exposure controls and disposal

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**7. HANDLING AND STORAGE**

**7.1 Precautions for safe handling**

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

**7.2 Conditions for safe storage, including any incompatibilities**

Store in cool, dry, well ventilated area, removed from oxidising agents, alkalis, acids and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

**7.3 Specific end use(s)**

Packed in blue 250kg drums, loaded in 1000kg lots on a pallet, sealed with a numbered plastic seal and lead seal. No other information provided.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**8.1 Control parameters**

<b>Exposure standards</b>	OHS Act South Africa	-	0.1mg/m <sup>3</sup>
	TLV / TWA:ACGIH	-	0.02mg/m <sup>3</sup>
	TWA ASCC (AUS)	-	0.05mg/m <sup>3</sup> metal dust and fume (as Co)
	UK EH40 WELs TWA	-	0.1mg/m <sup>3</sup>
	PEL (USA)	-	0.01mg/m <sup>3</sup> metal dust and fume (as Co)
	REL (USA)	-	0.05mg/m <sup>3</sup> metal dust and fume (as Co)
	TLV (USA)	-	0.02mg/m <sup>3</sup> BEI (as Co)
	EL (Canada)	-	0.02mg/m <sup>3</sup> IARC 2B
	EV (Canada)	-	0.1mg/m <sup>3</sup>

**Biological Limits**

Reference	Determinant	Sampling Time	BEI
ACGIH BEI	Cobalt in urine	End of shift at end of work week	15 mg/L
ACGIH BEI	Cobalt in blood	End of shift at end of work week	1 mg/L

**8.2 Exposure Controls**

**Engineering controls** Do not inhale dust / powder. Use with adequate natural ventilation. Where a dust inhalation hazard exists, mechanical extraction ventilation is recommended. Maintain dust / fume levels below the recommended exposure standard.

**PPE**

**Eye** Wear dust-proof goggles  
**Hand** Wear PVC or rubber gloves.  
**Body** Wear overalls. Do not take working clothes home.  
**Respiratory** 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).

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 Information on basic physical and chemical properties**

<b>Appearance</b>	:	Grey metallic powder
<b>Physical state</b>	:	Solid
<b>Odour</b>	:	Odourless
<b>Odour threshold</b>	:	Not applicable
<b>Flash Point</b>	:	Not Applicable

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<b>Boiling Point</b>	:	2927°C (5300.6°F)
<b>Melting Point</b>	:	1495°C (2719.4°F)
<b>Exposure Standard (TWA)</b>	:	0.02 mg/m <sup>3</sup> (cobalt)
<b>Evaporation Rate</b>	:	Not Available
<b>pH</b>	:	Not applicable
<b>% Volatiles</b>	:	Not Available
<b>Specific Gravity</b>	:	8.92
<b>Vapour Pressure</b>	:	Not applicable
<b>Solubility (water)</b>	:	Insoluble
<b>Flammability</b>	:	Non Flammable
<b>Lower Explosion Limit</b>	:	Not applicable
<b>Upper Explosion Limit</b>	:	Not applicable
<b>Auto-ignition temperature</b>	:	Not available
<b>Decomposition temperature</b>	:	Not available
<b>Viscosity</b>	:	Not applicable
<b>Viscosity temperature</b>	:	Not applicable
<b>Molecular Weight</b>	:	58.93g/mole
<b>Co concentration</b>	:	>=99.80%

**9.2 Other information**  
No other information available.

**10. STABILITY AND REACTIVITY**

**10.1 Reactivity**  
Carefully review all information in sections 10.2 to 10.6.

**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, <3um, can combust when exposed to ignition sources), as well as incompatible materials (section 10.5)

**10.5 Incompatible materials**  
Incompatible violently/explosively with strong oxidising agents (e.g. peroxides ammonium nitrate, bromine tetrafluoride and nitryl fluoride.) Attacked slowly by ammonia and sodium hydroxide. Incompatible with reactive metals (e.g. potassium and sodium) and with acids (e.g. hydrochloric acid). May spontaneously ignite on contact with air or acetylene in finely ground form. May evolve EXPLOSIVE hydrogen gas on contact with water/acids.

**10.6 Hazardous decomposition products**  
May evolve toxic cobalt oxides when heated to decomposition.

**11. TOXICOLOGICAL INFORMATION**

**11.1 Information on toxicological effects**

<b>Acute Toxicity</b>	LDLo (Ingestion)	:	750mg/kg (rabbit)
	LDLo (Intraperitoneal)	:	100mg/kg (mouse)
	LDLo (Intravenous)	:	100mg/kg (mouse)
	LD50 (Ingestion)	:	6170mg/kg (rat)
	LD50 (Intaperitoneal)	:	100mg/kg (rat)

**Skin** Irritant. Cobalt has been reported to cause dermatitis and skin sensitisation. Chronic over exposure may result in “Cobalt itch” or “carboly-itch” (“measle

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like” red spotty rash). Prolonged and repeated contact may result in skin rash, dermatitis and hypersensitivity with allergic response.

<b>Eye</b>	Irritant. Contact may result in irritation, lacrimation, pain, redness and conjunctivitis. Prolonged contact may cause corneal burns and possible permanent damage.
<b>Mutagenicity</b>	Insufficient data available to classify as a mutagen. Cobalt salts (not metal) have been reported to cause chromosomal damage in experimental animals.
<b>Carcinogenicity</b>	Cobalt and cobalt compounds may cause cancer to humans (IARC Group 2B).
<b>Reproductive</b>	Insufficient data available to classify as a reproductive toxin.
<b>STOT – SE</b>	Irritant. Over exposure to cobalt has been reported to cause respiratory sensitisation, with asthma like symptoms. Over exposure may result in upper respiratory and mucous membrane irritation, coughing and, at high levels, breathing difficulties with asthma like symptoms, with wheezing and shortness of breath. Potential respiratory sensitiser. Chronic exposure may result in lung fibrosis, hypersensitivity and asthma. DEAFNESS: Bilateral nerve deafness has been described following chronic occupational exposure to cobalt powder or during chronic treatment of anaemia with cobalt chloride. Deafness typically resolves completely after discontinuation of exposure (Gardner, 1953; Schirmacher, 1967; Meecham & Humphrey, 1991). RHINITIS: Rhinitis has been described in diamond polishers with exposure to fine cobalt dust and symptoms of bronchoconstriction (Gheysens et al, 1985). Metallic cobalt may be retained in and slowly absorbed from the lungs, with an estimated half-life of 5 to 15 years (HSDB).
<b>STOT - RE</b>	Low to moderate toxicity. Ingestion may result in nausea, vomiting, abdominal pain, diarrhoea, fatigue, dizziness and drowsiness, and with large doses unconsciousness. Ingestion of cobalt salts may cause reproductive effects. Thyroid damage, liver and kidney damage and heart failure may occur.
<b>Aspiration</b>	This product does not present an aspiration hazard.
<b>Sensitisation</b>	Sufficient data from human studies exists to warrant classification of cobalt as a dermal sensitiser via skin contact, and a respiratory sensitiser via inhalation

**12. ECOLOGICAL INFORMATION**

**12.1 Toxicity**

Only if reacted with acids under specially applied conditions. Limited eco toxicity data was available for this product at the time this report was prepared. Ensure appropriate measures are taken to prevent this product from entering the environment and reacting with strong acids.

Cobalt is absorbed to a great extent by hydrolysis or oxidate sediments. Cobalt may be taken into solution in small amounts through bacteriological activity.

**12.2 Persistence and degradability**

No information available.

**12.3 Bio accumulative potential**

No information available.

**12.4 Mobility in soil**

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The availability of cobalt is primarily regulated by pH and is usually found in soils as divalent cobalt. At low pH it is oxidised to trivalent cobalt and often found associated with iron. Adsorption of divalent cobalt on soil colloids is high between pH 6 & 7, whereas leaching and plant uptake of cobalt are enhanced by a lower pH (HSDB).

**12.5 Results of PBT and vPvB assessment**

No information available.

**12.6 Other adverse effects**

No information available.

**13. DISPOSAL CONSIDERATION**

**13.1 Waste treatment methods**

**Waste Disposal** Collect and reuse where possible. Minimise dust generation. Contact Impala Refineries for additional specific information (section 1.3).

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

**14. TRANSPORT INFORMATION**

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

	<b>Land Transport (ADG)</b>	<b>Sea Transport (IMDG/IMO)</b>	<b>Air Transport (IATA/ICAO)</b>
<b>14.1 <u>UN #</u></b>	None Allocated	None Allocated	None Allocated
<b>14.2 <u>UN proper shipping name</u></b>	None Allocated	None Allocated	None Allocated
<b>14.3 <u>Transport hazard class</u></b>			
<b>D.G Class</b>	None Allocated	None Allocated	None Allocated
<b>Subsidiary risk(s)</b>	None Allocated	None Allocated	None Allocated
<b>14.4 <u>Packing Group</u></b>	None Allocated	None Allocated	None Allocated
<b>14.5 <u>Environmental hazards</u></b>	None Allocated	None Allocated	None Allocated
<b>14.6 <u>Special precautions for user</u></b>			
<b>Hazchem code</b>	None Allocated	None Allocated	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.

**Classifications** N : Dangerous for the environment.  
Xi : Irritant

**Risk phrases** R22 : Harmful if swallowed  
R37 : Irritating to respiratory system  
R42/43: May cause sensitisation by inhalation or skin contact  
R48/23 : Toxic. Danger of serious damage to health by prolonged exposure through inhalation  
R49 : May cause cancer by inhalation  
R53: May cause long term adverse effects in the aquatic environment

**Safety phrases** S2 : Keep out of reach of children  
S22 : Do not breathe dust  
S24 : Avoid contact with skin

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S36/37/39 : Wear suitable protective clothing, gloves, eye protection  
S61 : Avoid release to the environment

**Regulatory information**

SA Hazardous Substances Act 15/1973  
SANS 10228:2012 SA National Standard – The identification and classification of dangerous goods for transportation by road and rail modes

GHS of Classification and Labelling of Chemicals ST/SG/AC.10/3-/Rev.6

Regulation (EC) No. 1907/2006 of the European Parliament and the Council of December 2006

**15.2 Chemical safety assessment**  
No other information available

**16. OTHER INFORMATION**

**Additional information**

**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.

**EXPOSURE STANDARDS – TIME WEIGHTED AVERAGES:** Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced; strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

**HEALTH EFFECTS 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 report which encompasses all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

**PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:** The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as 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.

**COLOUR RATING SYSTEM:** Amber. In accordance with Chem Alert reports are assigned a colour rating of Green, Amber or Red for the purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all Chem Alert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline a Green colour rating indicates a low hazard, and Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

Whilst all due care has been taken in the preparation of the Colour Rating System, it is intended as a guide only and does not

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relation to the accuracy of the Colour Rating System. As far as is lawfully possible, Impala accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

**Abbreviations**

ADG	European agreement on the International carriage of dangerous goods by road
AUS	Australia
mg/m <sup>3</sup>	Milligrams per cubic metre
CAS#	Chemical Abstract Service number – used to uniquely identify chemical compounds
CNS	Central Nervous System
EC#	Enzyme commission
EU	European Union
GHS	Global Harmonized System of Classification and Labelling of Chemicals
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ICSC	International Chemical Safety Card
IMDG	Inter Modal transport of Dangerous goods
IMO	International Maritime Organisation
M	Moles per litre, a unit of concentration
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.
OEL	Occupational Exposure Limit
PPE	Personal Protective Equipment
Ppm	Parts per million
RTECS	The Registry of Toxic Effects of Chemical Substances
STEL	Short Term Exposure Limit
STOT-RE	Specific Target Organ Toxicity – repeated exposure
STOT-SE	Specific Target Organ Toxicity – single exposure
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA/ES	Time Weighted Average of Exposure Standard

**Report Status:** Impala Platinum Ltd. have exercised reasonable care in the preparation of the information contained in this SDS, however, it assumes no responsibility or liability to the accuracy and suitability of such information, for application to the Buyer’s intended purposes or consequences of its use. As regulatory standards and guideline recommendations are revised from time to time, Impala gives no assurance that the information contained in this SDS will be current at the time that the SDS is used. It is the responsibility of the Buyer/User to ensure that the most recent version of this document is available.

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