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REVISION N°.: 1	HAZARD DATA SHEET – PLATINUM
	SECTION VAULTS
	DOCUMENT N°.: HDS 015

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1. **PRODUCT AND COMPANY IDENTIFICATION**

Product Name: Platinum Sponge / Platinum ingot

Synonyms: Impala Platinum, Platinum Metal

Use(s): Manufacture of Platinum chemicals for use in catalysts, as metal and/or in alloys for jewellery, electrical contacts, thermocouples, medical and petroleum industries.

Supplier Details: Impala Platinum Ltd – Refineries
Platinum Metals Refinery
P.O. Box 222
SPRINGS
1560
GAUTENG
Republic of South Africa

Contact Persons: Laboratory Manager – Jamie Welman;
Tel: +27 11 360 3255; E-mail: jamie.welman@implats.co.za

Platinum Section Manager – Annelie Jager
Tel: +27 11 360 3127; E-mail: annelie.jager@implats.co.za

Emergency Contact Information:

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**

Classification according to GHS Classification (SANS 10234):

Health hazards:

Acute toxicity, oral	Category 1	H303 – 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 skin reaction

Environmental hazards: Category 4 H413 – May cause long lasting harmful effects in aquatic life

Hazard Summary:

Physical hazards: Not classified for physical hazards

Health hazards: May be harmful if swallowed and/or inhaled. May cause skin irritation.

Environmental hazards: May cause long lasting adverse effects in aquatic environment.

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Specific hazards: If dissolved, ensure adequate enclosure or ventilation; do not breathe mists and avoid solution contact with eyes, skin and clothing – may cause sensitization or allergic reaction. If melted do not breath furnace fumes.

Label Elements:

Hazard Pictograms:



Signal Word: DANGER

Health Statements: H303 – May be harmful if swallowed
 H317 – May cause an allergic skin reaction
 H333 – May be harmful if inhaled

Precautionary statements:

Prevention: P201 – Obtain special instruction before use
 P202 – Do not handle until all safety precautions have been read and understood
 P261 – Avoid breathing dust
 P264 – Wash thoroughly after handling
 P270 – Do not eat, drink or smoke when using this product
 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
 P363 – Wash contaminated clothing before reuse
 P302 + P352 – IF ON SKIN: Wash well with plenty of soap and water
 P308 + P313 – If exposed or concerned get medical advice/attention
 P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
 P333 + P313 – If skin irritation or rash occurs get medical advice/attention

Storage: Not applicable

Disposal: P501 – Dispose of contents/container in accordance with local/regional/national/international regulations

Supplemental label information: None

Other Hazards: Take care when dissolving platinum metal/sponge. Ensure to get the necessary safety data for the specific salts in solution. Wear the required personal protective equipment when doing so.

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6. **ACCIDENTAL RELEASE MEASURES**

Personal precautions: Wear all necessary personal protective equipment for the specific environment and task.

Environmental precautions: May cause long lasting harmful effects in aquatic life.

Methods for cleaning-up: Sweep up.

7. **HANDLING AND STORAGE**

Packaging Material: Packed in plastic bags sealed in tins which in turn are sealed in boxes.

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

Storage: 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.

Transport: Not regulated for transport purposes.

8. **EXPOSURE CONTROLS / PERSONAL PROTECTION**

Occupational Exposure Limit: (ACGIH, edition 2008)

TLV-TWA: Pt (metal/dust) 1mg/m³ Pt (soluble salts) 0.002mg/m³

Respiratory protection: Use an appropriate and approved respirator for dust if airborne concentration is likely to exceed the occupational exposure limits.

Hand protection: Wear suitable gloves (PVC or rubber)

Eye protection: Wear dust-proof goggles.

Skin protection: Safety shoes, overalls or similar full-body work clothes should be worn and laundered daily. This protective clothing should not be worn at home.

Personal Hygiene: Practice good housekeeping and personal hygiene procedures. No eating, drinking or smoking in work area. Wash hands thoroughly before eating, drinking or smoking. Avoid ingestion, inhalation and skin and eye contact. Medical examinations, monitoring, record keeping and hygiene facilities are recommended.

Exposure 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.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Pale gray coarse powder that is both malleable and ductile
Odour	:	Odourless
Flammability (Solid, gas)	:	Non Flammable
Flash Point	:	Not Relevant
Lower Explosion Limit	:	Not Relevant
Upper Explosion Limit	:	Not Relevant
Auto Ignition Temperature	:	Not Relevant
Boiling Point	:	3825 °C
Melting Point	:	1768 °C
Evaporation Rate	:	Not Relevant
pH	:	Not Relevant
%Volatiles	:	Not Relevant
Specific Gravity	:	21.45
Vapour Pressure	:	Not Relevant
Relative density	:	2.1-2.8 (variable)
Solubility (water)	:	Insoluble
Molecular Weight	:	195.08g/mole
Pt concentration	:	≥99.95%

10. STABILITY AND REACTIVITY

Flammability: Non-flammable. May evolve toxic metal oxides when heated. Very fine dusts may explode in very high concentrations if exposed to high energy heat or ignition sources (highly unlikely in current form). May evolve flammable – explosive hydrogen gas in contact with strong acids.

Reactivity: The material is stable under normal circumstances. Avoid contact with acids. When exposed to air, it does not tarnish or corrode. It is not attacked by most acids, but will dissolve in aqua regia. Aqua regia is a mixture of hydrochloric and nitric acids. Platinum also dissolves in very hot alkalis e.g sodium hydroxide.

Decomposition Products: Exposure to high temperatures (> 1000°C), generation of dust. Will evolve toxic metal oxides when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazards Summary: Platinum dust and some platinum compounds can have mild health effects. If inhaled, they can cause sneezing, irritation of the nose, and shortness of breath. If spilled on the skin, they can cause a rash and skin irritation.

Eye: Irritant. Exposure may result in eye irritation, lachrymation, burning sensation and conjunctivitis.

Inhalation: Low irritant. Inhalation of dusts may result in upper respiratory tract irritation. Platinum metal poses a low hazard but platinum **salts** are potential irritants and sensitizers.

Skin Irritation: Non-irritant: Platinum metal is relatively inert, though there has been one case of sensitization. Direct contact with platinum **salts** may result in irritation and skin sensitization.

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Ingestion: Platinum sponge is **non-toxic**. TDLo 9100mg/kg/26 weeks intermittently (rat). May cause irritation of the gastro-intestinal tract. Platinum **salts** may be more toxic e.g. Platinum Chloride LD₅₀ 276mg/kg Rat, oral.

RESPIRATORY OR SKIN SENSITIZATION

Non-irritant: Platinum metal is unlikely to cause irritation except as a dust. Platinum **salts** are irritating to eyes, skin and mucous membranes and may cause sensitization.

Chronic exposure: to soluble complex platinum salts may result in allergy to complex salts of platinum (ACSOP). Symptoms include nose and throat irritation, sneezing, coughing, tight chest, breathing difficulties and sensitization with asthma-like symptoms. If detected early symptoms subside on removal from exposure but effects can linger with chronic exposure. Platinum salts are reported to cause lymphocytosis (a condition in which there is an excess of lymph cells in the body).

REPRODUCTIVE CELL MUTAGENICITY

The effects of Platinum **salts** have not been fully investigated.

CARCINOGENICITY

Non-carcinogenic: Platinum **salts** are listed as a non-carcinogenic in (all U.S.):

- i) in the National Toxicity Program (NTP) Report on Carcinogens
- ii) in the International Agency for Research on Cancer (IARC) monographs
- iii) by the Occupational Safety and Health Administration (OSHA)

REPRODUCTIVE TOXICITY

Soluble Platinum **salts** may cross the placenta and affect the foetus. Pregnant women should avoid contact with Platinum **salts**. However, the effects have not been fully investigated.

SPECIFIC TARGET ORGAN TOXICITY – Single exposure

Platinum **salts** may cause possible lung and kidney damage. However, the effects have not been fully investigated.

SPECIFIC TARGET ORGAN TOXICITY – Repeated exposure

Platinum **salts** may cause possible lung and kidney damage. However, the effects have not been fully investigated.

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12. **ECOLOGICAL INFORMATION**

Due to the very low solubility of Platinum sponge it does not directly pose any ecological threat. However, if converted to soluble Platinum salts it may have the following effects:

Accumulation:

- **Persistence:** hazard of platinum persistency in the environment
- **Bioaccumulative potential:** hazard of platinum accumulation
- **Biomagnification:** potential hazard of platinum magnification
- **Biodegradability:** no information available

Ecotoxicity:

- **Aquatic organisms:** **Very toxic** to aquatic organisms. May cause long term adverse effects in the aquatic environment.

LC₅₀ Fish 96h; 2.5mg/l EC₅₀ Daphnia 48h; 0.082mg/l

EC₅₀ Bacteria; 0.025mg/l LC₅₀ Scud 196h; 0.11mg/l

- **Soil organisms:** unknown
- **Plants and terrestrial animals:** unknown; no data available

Other adverse effects:

- **Ozone depletion potential:** does not contain ozone depleting substances
- **Photochemical ozone creation potential:** not applicable
- **Global warming potential:** not applicable
- **Effects on waste water treatment plants:** unknown; no data available

The environmental effects of Platinum and its compounds have not been fully evaluated.

13. **DISPOSAL CONSIDERATION**

Waste Disposal: Disposer must comply with state and local laws. This material can be metallurgically recycled by Impala Platinum, South Africa, which is a pre-authorized facility for the environmentally sound recovery of metals. Collect and reuse where possible. Minimise dust generation. Contact Impala Refineries Laboratory Manager on +27 11 360 3255 or Platinum Section Manager on +27 11 360 3127.

Legislation: Dispose of in accordance with relevant local legislation.

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14. **TRANSPORT INFORMATION**

NOT CLASSIFIED AS A DANGEROUS GOOD

NOT REGULATED FOR TRANSPORT PURPOSES

Packing: in plastic bags sealed in tins which in turn are sealed in boxes

UN-Number: not applicable

IMDG-Code: not applicable

ICAO / IATA: not applicable

RID / ADR: not applicable

15. **REGULATORY INFORMATION**

United States: CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated

Canada: WHMIS Classification: D2B (toxic material)

EU/EC Classification: X_n (Harmful); not classified in Annex I of Directive 67/548/EEC (will change with implementation of GHS/REACH)

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

16. **OTHER 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.

Colour Rating System: Amber. 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 indicates 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 provide any warranty in 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.

Personal Protective Equipment Guidelines: The recommendation for protective equipment contained within this Chem Alert 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. Information provided by Risk Management Technologies is summarised for ease of use. Additional technical information is available by calling +27 11 360 3255 or +27 11 360 3127.

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

The buyer assumes all risks with the use and handling of the material. The seller assumes no responsibility for injury or damage caused by use of the material even if reasonable safety procedures are followed. The information contained in this sheet is developed from what is believed to be accurate and reliable sources but the seller makes no warranties, either expressed or implied, and assumes no responsibility for the accuracy or completeness of the data contained herein.

Abbreviations:

- mg/m³ – 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^o. - 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

Hazard Information References:

RTECS: Registry of toxic effects of Chemical Substances, NIOSH, edition January 1999
 Sax's Dangerous Properties of Industrial Materials (8th 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 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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