



PAGE 1 of 7	BASE METALS REFINERY	
REVISION N°.: 9	*SAFETY DATA SHEET – AMMONIUM SULFATE	
	DOCUMENT N°.: MAN-HDS-005	

DISTRIBUTION CONTROL SHEET

COPY N°	LOCATION	TITLE
1	Quality Offices	Document Controller
2	SHEQ	Safety & Hygiene Manager (Electronic)
3	Despatch	Process Supervisor (Electronic)
4	Plant Manager's Office	Plant Manager – Nickel (Electronic)
5	Manager – BMR Office	Manager – BMR (Electronic)
6	Lab. Manager's Office	Laboratory Manager (Electronic)
7	Marketing	Marketing Executive (Electronic)
8	IRS	IRS Superintendent (Electronic)
9	Sales Admin.	Sales Admin Manager (Electronic)

This document is valid for date of printing (Left Corner) only!
Please destroy for use!

PAGE 2 of 7	BASE METALS REFINERY	
REVISION N°.: 9	*SAFETY DATA SHEET – AMMONIUM SULFATE	
	DOCUMENT N°.: MAN-HDS-005	

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

1.1 **Supplier Details**

Impala Platinum Ltd – Refineries

Base Metals Refinery

P.O. Box 222

SPRINGS

1560

GAUTENG

Republic of South Africa

Tel.: +27 11 360 3777

Fax.: +27 11 360 3495

Head Office

Implats

Private Bag x18

NORTHLANDS

2116

Gauteng

Republic of South Africa

Tel.: +27 11 731 9000

Fax.: +27 11 731 9254

1.2 **Contact Persons:**

Refineries - Manager - BMR

Head Office - Marketing Executive

1.3 **Emergency Contact Information:** For emergency information – see above for contacts

1.4 **Product Description:** Ammonium Sulfate

1.5 **Synonyms:** Ammonium sulfate, ammonium sulfate crystals, ammonium sulfate fertiliser, AS/ZA/ sulfate of ammonia, sulfuric acid diammonium salt, sulfate of ammonium.

1.6 **Uses:** Fertiliser, water treatment, fire retardant

2. **HAZARDS IDENTIFICATION**

CLASSIFIED AS HAZARDOUS

NOT CLASSIFIED AS A DANGEROUS GOOD

Not hazardous as specified in Directive 67/548/EEC.

Health Hazard Summary: Low toxicity – irritant. This product may only present a hazard with direct eye contact, prolonged and repeated skin contact or with vapour inhalation at high levels. Chronic effects are not anticipated.

Page 3 of 6	Document N ^o .:MAN-HDS-005	BASE METALS REFINERY
Revision N ^o .: 9	*SAFETY DATA SHEET – AMMONIUM SULFATE	

- 2.1 **Eye:** Low to moderate irritant. Direct contact may result in lacrimation, pain, redness and conjunctivitis.
- 2.2 **Inhalation:** Low irritant. Over exposure at high levels may result in mucous membrane irritation of the nose and throat with coughing.
- 2.3 **Skin:** Low irritant. Prolonged and repeated contact may result in irritation, skin rash and dermatitis.
- 2.4 **Ingestion:** Low toxicity. Ingestion may result in headache, nausea, vomiting, gastrointestinal irritation and diarrhoea.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	:	Ammonium sulfate
Formula	:	(NH ₄) ₂ SO ₄
CAS N^o.	:	7783-20-2
Poison Sched.	:	None Allocated
Hazchem.	:	None Allocated
U.N. #	:	None Allocated
D.G Class	:	None Allocated
PKG Group	:	None Allocated
EPG	:	None Allocated
Sub/Tert. Risk	:	None Allocated
Concentration	:	> 99.70%

4. FIRST AID MEASURES

- 4.1 **Eye:** Flush gently with running water, holding eyelids open for 20 minute period. Seek immediate medical attention. Keep patient calm
- 4.2 **Inhalation:** If over exposure occurs leave exposure area immediately. If other than minor symptoms are displayed seek immediate medical attention.
- 4.3 **Skin:** Remove contaminated clothing and gently flush affected areas with soap and water. Seek medical attention if irritation develops. Launder clothing before reuse.
- 4.4 **Ingestion:** Due to product form and application, ingestion is considered highly unlikely. For advice contact a Doctor or the Poisons Information Centre on +27 11 642 2417 or 0800 113911 (South Africa). Do not induce vomiting.

5. FIRE FIGHTING MEASURES

- 5.1 **Flammability:** Non flammable. No fire or explosion hazard exists. Will evolve toxic sulphur / nitrogen oxides and ammonia when heated to decomposition.
- 5.2 **Fire and Explosion:** Non flammable. No fire or explosion hazard exists. Will evolve toxic sulfur / nitrogen oxides and ammonia vapours when heated to decomposition.
- 5.3 **Extinguishing:** Non flammable.
- 5.4 **Hazchem Code:** None Allocated.

6. ACCIDENTAL RELEASE MEASURES

- 6.1 **Spillage:** If spilt (bulk), wear dust-proof goggles, PVC/rubber gloves, a Class P1 (Particulate) respirator where a dust risk inhalation exists. Ventilate spillage area. Collect spill and place in sealable containers for disposal. Avoid generating dust.

Page 4 of 6	Document N°.:MAN-HDS-005	BASE METALS REFINERY
Revision N°.: 9	*SAFETY DATA SHEET – AMMONIUM SULFATE	

6.2 Environment:

Mobility	:	Highly water soluble, it is not absorbed by soil.
Persistence and degradability	:	Readily biodegradable.
Bio accumulative potential	l:	No bio accumulation potential.
Ecotoxicity	:	LC50 (fish) > 10mg/L/96hrs, EC50 (daphnia) > 10mg/L/48hrs, EC50 (algae) > 10mg/L.

7. HANDLING AND STORAGE

7.1 **Packing:** Bulk loaded only, as approximately 40 000kg into a rail truck or 30 000kg into a road truck or tanker.

7.2 **Handling:** Read product label carefully before use. Use safe work practices to avoid eye or skin contact and inhalation. Observe good personal hygiene. Prohibit eating, drinking and smoking in contaminated areas. Wash hand before eating.

7.3 **Storage:** Store tightly sealed in cool, dry, well ventilated area, removed from oxidising agents and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Store away from alkalis, copper and copper alloys.

7.4 **Transport:** Not regulated for transport purposes.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 **Ventilation:** Do not inhale dust / powder. Use with adequate natural ventilation. Where a dust inhalation hazard exists mechanical extraction ventilation is recommended.

8.2 **Occupational Exposure Limits:** None listed under ACGIH (OEL recommended = 10mg/m³ for nuisance dust).

8.3 **PPE:** Wear dust-proof goggles and PVC or rubber gloves. When handling large quantities wear overalls. Where a dust inhalation risk exists, wear a Class P1 (Particulate) respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	White / off white crystalline solid
Odour	:	Odourless
Flammability	:	Non Flammable
Flash Point	:	Not Relevant
Boiling Point	:	Not relevant
Melting Point	:	235 °C
Exposure Standard (TWA)	:	Not available
Evaporation Rate	:	Not Relevant
pH	:	Not Relevant
%Volatiles	:	Not Relevant
Specific Gravity	:	1.769g/cm ³
Vapour Pressure	:	Not Relevant
Solubility	:	706g/l @ 20°C
Lower Explosion Limit	:	Not Relevant
Upper Explosion Limit	:	Not Relevant
Modular Weight	:	132.14
N concentration	:	>=20.6%

10. STABILITY AND REACTIVITY

10.1 **Flammability:** Non flammable. No fire or explosion hazard exists. Will evolve toxic sulfur / nitrogen oxides and ammonia when heated.

Page 5 of 6	Document N ^o .:MAN-HDS-005	BASE METALS REFINERY
Revision N ^o .: 9	*SAFETY DATA SHEET – AMMONIUM SULFATE	

10.2 **Reactivity:** Incompatible with oxidising agents (e.g. potassium chlorate, sodium hypochlorite), strong alkalis, copper and copper alloys).

10.3 **Decomposition Products:** Will evolve toxic sulfur / nitrogen oxides and ammonia when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary: Low to moderate toxicity – irritant. This product may only present a hazard with direct eye contact, prolonged and repeated skin contact or with dust inhalation at high levels. Chronic effects are not anticipated.

11.1 **Eye:** Low to moderate irritant. Exposure may result in irritation, pain and redness.

11.2 **Inhalation:** Low irritant. Over exposure at high levels may result in mucous membrane irritation of the nose and throat with coughing.

11.3 **Skin:** Low irritant. Prolonged and repeated contact may result in irritation, skin rash and dermatitis.

11.4 **Ingestion:** Low to moderate toxicity. Ingestion may result in nausea, vomiting, gastrointestinal irritation and diarrhoea.

11.5 **Toxic Data:** Ammonium Sulfate (7783-20-2);
LD50 (Ingestion) : 640 mg/kg (mouse).

12. ECOLOGICAL INFORMATION

Environment: Limited ecotoxicity 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.

13. DISPOSAL CONSIDERATION

13.1 **Waste Disposal:** Reuse or recycle where possible. Alternatively, ensure product is covered with moist soil to prevent dust generation and dispose of to an approved landfill site. Contact the manufacturer for additional information.

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

14. TRANSPORT INFORMATION

Not classified as a Dangerous Good.

UN Number	:	None Allocated.
DG Class	:	None Allocated.
Subsidiary Risk(s)	:	None Allocated.
Packing Group	:	None Allocated.
Hazchem Code	:	None Allocated.

15. REGULATORY INFORMATION

Poison Schedule: A Poison schedule number has not been allocated to this product.

16. OTHER INFORMATION

16.1 **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.

Page 6 of 6	Document N ^o .:MAN-HDS-005	BASE METALS REFINERY
Revision N ^o .: 9	*SAFETY DATA SHEET – AMMONIUM SULFATE	

16.2 **Exposure Standards–Time Weighted Average (TWA) or WES (Workplace Exposure Standard) (NZ):** 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 condition; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

16.3 **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.

Whist 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.

16.4 **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 +61 89 322 1711.

16.5 **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.

16.6 **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# - 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.

16.7 **Report Reviewed:** *17 March 2009.

16.8 **Report Status:** Impala Platinum Ltd. have exercised reasonable care in the preparation of the information contained in this HDS, 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 HDS will be current at the time that the HDS is used. It is the responsibility of the Buyer/User to ensure that the most recent version of this document is available.

The data in this HDS relates only to the specific material designated herein and does not relate to use in combination with other materials and in any process. Impala assumes no responsibility for any physical or chemical changes, which the Buyer/User may make to the material designated in this HDS. Since use of this HDS information and the opinions and conditions of the use of the product are not within the control of Impala Platinum Ltd., the Buyer/User is obligated to determine the conditions of safe use of the product.