AIC MODEL SAFETY DATA SHEET
SDS FERTILISER GROUP 1

INTRODUCTION

This Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Agricultural Industries Confederation. It does not apply to any other product of similar name or nature. The products covered will be clearly identified by the name of the marketer and/or manufacturer on the associated labels and/or documents. Qualifying product will be marked as follows:

SDS FERTILISER GROUP 1

Products in Group 1 ***are solid straight Nitrogen fertilisers*** *containing*
-Not less than 90% ammonium nitrate with not more than 0.2% total combustible/organic material calculated as carbon and with added matter, if any, which is inorganic and inert towards ammonium nitrate
-Less than 90% but more than 70% ammonium nitrate with other inorganic materials or more than 80% but less than 90% ammonium nitrate mixed with calcium carbonate and/or dolomite and/or mineral calcium sulpahte and not more than 0.4% total combustible/organic material calculated as carbon.
-mixtures of ammonium nitrate and ammonium sulphate with more than 45% but less than 70% ammonium nitrate and not more than 0.4% total combustible/organic material calculated as carbon such that the sum of the percentage compositions of ammonium nitrate and ammonium sulphate exceeds 70%.

The contents below mainly cover the first two types of compositions listed above. For AN + AS types of fertiliser this SDS will require additional information about AS in various sections, which can be extracted from SDSFG 5.

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

1.1 Identification of the Substance/preparation

The company should state the trade name(s) and product shipping name, Ammonium Nitrate Based Fertiliser.

1.2 Use

As a fertiliser.

1.3 Company

Provide the company's name, address, telephone number and e-mail address of the competent person responsible for the Safety Data Sheet.

1.4 Emergency Telephone

State the emergency telephone number and specify if the number is available only during office hours.

2. HAZARDS IDENTIFICATION

2.1 Regulatory Classification

Neither ammonium nitrate nor these fertiliser preparations are classified as dangerous materials according to EC Directive 67/548/EEC or 1999/45/EC.
Classified as an oxidiser, class 5.1, under the UN transport regulations.

2.2 Physicochemical hazards

These fertilisers are not themselves combustible or flammable, but they have oxidising properties and can support combustion even in the absence of air.

2.3 Human Health

Products are of a low toxicity but prolonged skin or eye contact may cause some irritation.

Ingestion: Small quantities are unlikely to cause toxic effects.

Large quantities may give rise to gastro-intestinal disorders and in extreme cases (particularly in children) formation of methaemoglobin ("blue baby" syndrome) and cyanosis (indicated by blueness around the mouth) may occur. No adverse long term effects are known.

Inhalation: Low toxicity dust but high concentration of air-borne material may cause irritation of the nose and upper respiratory tract with symptoms such as sore throat and coughing. Generally regarded as a nuisance dust with no specific official Occupational Exposure Limit (OEL). Recommend a total inhalable dust standard for nuisance dust of 10 mg/m^3 as an 8 hour Time Weighted Average. See HSE Guidance Notes EH40/2005 and HSG 173.

Molten material: Will cause burns.

Fire and thermal decomposition products: Inhalation of decomposition gases, containing oxides of nitrogen and ammonia, can cause irritation and corrosive effects on the respiratory system. Some lung effects may be delayed.

2.4 Environment

Ammonium nitrate is a nitrogen fertilizer. Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters or nitrate contamination. See Section 12.

2.5 Other Hazards

On heating it melts and further heating can cause decomposition, releasing toxic fumes containing nitrogen oxides, ammonia and oxides of sulphur. Under conditions of high temperature, confinement and/or contamination, a violent reaction can take place possibly leading to explosion. It has high resistance to detonation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Main Ingredient: Ammonium Nitrate (AN)
Chemical name: Ammonium nitrate **Formula:** $NH_4 NO_3$

EINECS: 229-347-8 **CAS:** 6484-52-2
The product also contains the following ingredients:

Ammonium sulphate
Magnesium nitrate
Sodium nitrate
Limestone or dolomite
Mineral calcium sulphate
Inert fillers such as sand
Coating materials such as oil, amine, clay or talc

4. FIRST AID MEASURES

4.1 Product

Skin contact: wash the affected area with soap and water.

Eye contact: irrigate eyes with copious amounts of eyewash solution or water for at least 10 minutes. Obtain medical advice if symptoms persist.

Ingestion: **do not** induce vomiting. Rinse mouth with water. Give milk or water to drink. Obtain medical attention if more than small quantities have been swallowed.

Inhalation: remove from source of exposure to dust. Keep warm and at rest. Obtain medical advice if symptoms persist.

4.2 Fire and Thermal Decomposition Products

Skin contact: wash copiously with cold water areas in contact with molten material. Seek medical advice.

Inhalation: remove from source of exposure to fumes. Keep warm and at rest. Give oxygen, especially if there is blueness around the mouth. Apply artificial respiration only if breathing fails. Provide medical assistance and monitoring for at least 48 hours, as delayed pulmonary oedema may develop.

5. FIRE-FIGHTING MEASURES

When the fertiliser **is not** directly involved in the fire, use the best means available to control the fire.

When the fertiliser **is** involved:

- Evacuate the area.
- Avoid breathing the fumes. Wear an approved breathing mask when fighting a fire or when fumes are being emitted.
- Call the fire brigade.
- Fight the fire from upwind and from outside the buildings, if possible.
- Open doors and windows to give maximum ventilation.
- **Do not** use chemical extinguishers or foams or attempt to smother the fire with steam or sand.
- Use plenty of water.
- Where combustible material is the source of the fire, extinguish this source as a matter of priority.
- **Do not** allow molten fertiliser to run into drains.
- If safe to do so prevent the contamination of the fertiliser with oil and other combustible materials.
- If fire run-off water enters any drain or water course, inform the appropriate water authorities immediately.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions

Do not smoke. Avoid dust inhalation. Avoid contact with decomposition products. See also section 8.

6.2 Environmental protection

Clean up spillage promptly and place in a clean appropriately labelled container. Do not allow to mix with sawdust and/or other combustible or organic substances.
Inform the appropriate water authority in the event of accidental watercourse contamination.

6.3 Methods for cleaning up

Clear all solid residues, placing them in suitable containers
Wash contaminated area with large quantities of water.

6.4 Disposal

See sections 13 and 16.

7. HANDLING AND STORAGE

7.1 Handling

Avoid prolonged contact with skin.
Avoid producing and inhaling dust. See also section 8.
Avoid contamination by materials such as diesel oil, grease and other combustible and incompatible materials.
Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.
Avoid application of heat.

7.2 Storage

The basic requirements are the avoidance of involvement in a fire or contamination.
Locate away from sources of heat, fire or explosion.
Keep away from combustible materials and chemical substances taking particular care on farms to ensure that it is not stored near straw, grain, diesel, etc.
Ensure high standard of house-keeping in the storage areas.
Do not permit smoking or the use of naked lights/flames in the storage area.
Ensure that any contaminated product or spillage is segregated from normal product and disposed of in conformity with section 13 and 16.
Restrict stack size of bagged products to 300 tonnes at non-manufacturing sites and keep 1 metre distance between stacks.
Buildings used for storage should be dry and well ventilated; stacks therein should be at least 1 metre from walls, eaves and beams.
Store under conditions that will avoid product breakdown by thermal cycling (large variations in temperature) e.g. not under direct sunlight.
For further guidance, see HSE Guidance IND(G) 230L, EFMA Guidance and AIC Code of Practice, see Section 16.

7.3 Packaging Materials

Polyethylene (PE), polypropylene (PP) and PTFE.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1 Workplace exposure limits (WEL)

EH40/2005 Workplace Exposure Limits (published by HSE) specify for dust: TWA 10 mg/m3 (inhalable)
TWA 4 mg/m3 (respirable)
Note: limestone is a listed substance in Table 1 in EH40/2005.

8.2 Precautionary and engineering measures

Avoid high dust concentration and provide ventilation where necessary.

8.3 Personal Protection

Wear suitable gloves when handling the product over long periods.
Use suitable dust respirator if dust concentration is high.

After handling product, wash hands and observe good hygiene practice.
In the presence of thermal decomposition gases use self-contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White or off-white granules or prills unless deliberately coloured during manufacture.
Odour	Odourless.
pH water solution (100g/l)	> 4.5.
Melting point	160-170°C depending on moisture content.
Boiling point	> 210°C (decomposes).
Flash Point	Not relevant
Flammability	Not relevant
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC). See section 10.4
Oxidizing properties	Can support combustion and oxidize. Not classified as an oxidizing material according to Directive 67/548/EEC and test A17.
Bulk density	Normally between 900-1100kg/m^3
Solubility in water	Pure ammonium nitrate: 1900g/l of water at 20°C. Hygroscopic - readily picks up moisture from the air.
Partition Coefficient: n-octanol/water	- 3.1 (ammonium nitrate, 25°C pH 6; OECD *107).*

10. STABILITY AND REACTIVITY

10.1 Stability
Stable under normal conditions of storage, handling and use.

10.2 Conditions to Avoid
High temperature, contamination by incompatible/combustible materials, application of heat and confinement e.g. welding or hot work on equipment or plant which may have contained fertiliser without first washing thoroughly to remove all fertiliser.

10.3 Materials to Avoid
Combustible and other organic materials, reducing agents: acids, alkalis, metal powders, zinc, copper and their alloys, carbon, phosphorus, sulphur, copper salts, chlorides, hypochlorites, perchlorates, chromates, nitrites, permanganates.

10.4 Hazardous decomposition products
Thermally decomposes when heated strongly with molten material starting to form between 160 - 170°C. Decomposition gases include water vapour and toxic fumes such as oxides of nitrogen and ammonia. Decomposition is accelerated by a number of substances , see 10.3.
Liberates ammonia when in contact with alkalies e.g. caustic soda, soda ash, lime.

Note:
The fertilizer has a high resistance to detonation. This resistance is decreased by the presence of contaminants, physical breakdown and/or high temperatures.
Heating under strong confinement (e.g. in tubes or drains) may lead to a violent reaction or explosion especially if there is contamination by some of the substances mentioned under Section 10.3.

11. TOXICOLOGICAL INFORMATION

11.1 Acute Toxicity*:*
Ammonium nitrate is harmless when handled correctly.
LD 50: 4 820 mg/kg rat, oral (RTECS).
LD 50: 2 460 - 2 950 mg/kg rat oral (OECD Guideline 401).
May cause methæmoglobinæmia. See Section 2.3.

11.2 Contact: Prolonged contact may cause irritation of the skin and mucous tissues.

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11.3 Inhalation: Prolonged exposure to dust may cause irritation When heated gives off toxic gases, see 2.3.

11.4 Ingestion: Small quantities unlikely to cause toxic effect. Large quantities may give rise to gastro-intestinal disorders, inducing headache, nausea, dizziness, vomiting. See 2.3.

11.5 Sensitisation: None reported**.**.

11.6 Chronic or Long-term Effects: None reported.

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity
Ammonium nitrate:
Low toxicity to aquatic life. TLM 96 between 10-100ppm
LC50-48h fish (Cyprinus carpio): 74 – 102 mg/l
IC50 invertebrates (Daphnia magna) = 555 mg/l
IC50 algae (Scenedesmus quadricauda) = 83 mg/l

12.2 Mobility
Very soluble in water. The nitrate ion (NO^{3-}) is mobile. The ammonium ion (NH^{4+}) is adsorbed by soil.

12.3 Persistence/Degradability
The nitrate ion is the predominant form of plant nutrition. It follows the natural nitrification/denitrification cycle to give nitrogen.

12.4 Bio-accumulation
No bio-accumulation phenomena shown.

12.5 Other Data
A high ammonium nitrate concentration in confined surface waters may induce proliferation of algae (eutrophication).

13. DISPOSAL CONSIDERATIONS

Depending on the degree and nature of contamination/physical deterioration and quantity of the material, dispose of by use as a fertiliser on farm, by spreading thinly on open ground or to an authorised disposal facility. Take care to avoid the contamination of watercourses and drains.
For further guidance refer to: Guidance for the Disposal of AN Based Fertiliser Which Fails to Meet the Requirements of the Ammonium Nitrate Safety Regulations 2003, published by AIC.
Measures should be taken to completely empty the bag of its contents, ensuring that residues of fertiliser do not contaminate the packaging during disposal (incineration, recycling, land filling etc).

14. TRANSPORT INFORMATION

UN Classification

Class 5, Division 5.1 Oxidizing Substance, UN Nos. 2067
Designation/Shipping Name: Ammonium Nitrate Based Fertilizer

Details for different transport modes
ADR/RID Class: 5.1, Label 5.1

	Hazard Identification number: 50 Classification code: O2 Packaging group: III
IMDG	Class: 5.1, Label 5.1 Packaging group: III Marine Pollutant : No Emergency schedule: F-H, S-Q
Bulk shipments	BC code, Appendix 1
IATA	Class: 5.1, Label 5.1

Meet the Requirements of the Ammonium Nitrate Safety Regulations 2003, published by AIC.

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Do not transport with incompatible materials, see 10.3.
Ensure that the transport is clean before loading the product.

15. REGULATORY INFORMATION

15.1 EC Regulations & Directives

Regulation 2003/2003/EC relating to fertilisers, OJ 304/1 20.11.2003.

Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances. Official Journal of the European Communities 196, 16.8.1967, p 1 (as amended). They are not classified as hazardous material for supply purposes according to EC Directive 67/548/EEC and CHIP.

Council Directive 1999/45/EC relating to the Mandatory Labelling of Dangerous Preparations. OJ: L200, 30.7.1999.

Seveso Directive 2003/105/EC of the European Parliament and of the Council of 16 December 2003 amending Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances. OJ L 345 0f 31 December 2003 pages 97-105.

15.2 National Regulations

The Fertilisers Regulations 1991, SI No. 2197 (as amended in 1995 and 1998).

The EC fertilizers (England and Wales) Regulations 2006, SI No. 2486.

The Ammonium Nitrate Materials (High Nitrogen Content) Safety Regulations 2003, SI No. 1082.

The Control of Major Accident Hazards Regulations 1999, SI No.743 and amended Regulations 2005, SI No. 1088.

The Notification of Installations Handling Hazardous Substances Regulations 1982,SI No. 1357.

16 OTHER INFORMATION

Sources of Data and References
Guidance for the Storage, Handling and Transportation of Solid Mineral Fertilizers (EFMA), 2007.

HSE Guidance IND (G) 230L - Storing and Handling Ammonium Nitrate.

AIC guidance: Code of Practice for the Storage, Handling and Transportation of Solid Ammonium Nitrate-Based Fertilisers, Fertiliser Manufacturers Association (UK), Rev 1, March 2000.

Guidance for the Disposal of AN Based Fertiliser Which Fails to

Product Supplied by:

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This safety data sheet provides health and safety information. The product is to be used in applications consistent with best farming practice. Individuals handling this product should be informed under COSHH of the recommended safety precautions and should have access to this information. The product information in this data sheet is to the best of the AIC's knowledge correct as at the date of publication.

Neither the AIC nor the Manufacturer, or Supplier accepts liability for any loss or damage (other than that arising from death or personal injury caused by negligence if proved) resulting from reliance on this information. Further information on individual products covered by this safety data sheet may be obtained from the Supplier or the Company whose name, address and telephone number will be found on the fertiliser container