



AIC MODEL SAFETY DATA SHEET SDS FERTILISER GROUP 2

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 2

Products in Group 2 are solid compound fertilisers of NPK, NP and NK types with between 70% and 90% ammonium nitrate and not more than 0.4% total combustible material. They are not capable of self sustaining decomposition i.e. "cigar-burning".

See HSE Guidance Notes EH4/2005 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

As this fertiliser contains nitrate *and phosphate*, 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:** NH₄NO₃

EINECS: 229-347-8

CAS: 6484-52-2

These products may contain some or all of the following ingredients in addition to the ammonium nitrate. Mono and di-ammonium phosphate, potassium chloride (muriate of potash), potassium sulphate, calcium nitrate, inert fillers such as sand or limestone, and coating materials, such as oil, amine, clay or talc, secondary nutrients and/or micro-nutrients.

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

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/m³ as an 8 hour Time Weighted Average.

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 self-contained breathing apparatus 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 excessive generation of dust. See also section 8. Avoid contamination by materials such as diesel oil, grease and other combustible 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 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.

Further guidance is given in 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 grey or brown granules or prills unless deliberately coloured during manufacture.
Odour	Odourless.
pH water solution (100g/l)	Usually > 4.5.
Melting point	Depends on composition. May decompose before melting, which may be around 160-170°C depending on moisture content
Boiling point	> 210°C (decomposes).
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC). See section 10.4.
Oxidizing properties	Products with high nitrate content can support combustion. 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	Soluble in water, extent depends on composition. Most formulations are hygroscopic.

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/salts, chromates; chlorates and reducing agents.

10.4 Hazardous decomposition products

Thermally decomposes when heated strongly with molten material starting to form between 160 - 170°C. On decomposition gases include water vapour and toxic fumes such as oxides of nitrogen, hydrogen chloride 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 fertiliser has a high resistance to detonation. This resistance is decreased by a number of factors such as the presence of contaminants and/or high temperature.

Heating under strong confinement (e.g. in tubes or drains) may lead to a violent reaction or explosion, especially if there is contamination by substances mentioned above.

11. TOXICOLOGICAL INFORMATION

11.1 Acute toxicity

Product toxicity will depend on the composition.

Ammonium nitrate:

Ammonium nitrate is harmless when handled correctly.

LD₅₀ : 4 820 mg/kg rat, oral (RTECS).

LD₅₀ : 2 460 - 2 950 mg/kg rat oral (OECD Guideline 401).

May cause methaemoglobinemia. See Section 2.3.

Monoammonium phosphate:

LD₅₀ (oral, rat) > 2000mg/kg

Diammonium phosphate:

LD₅₀ (oral, rat) > 2000mg/kg

Potassium chloride or sulphate:

LD₅₀ (oral, rat) > 2000mg/kg

Calcium nitrate:

LD₅₀ (oral, rat) 2100mg/kg

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

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

Most of the components are soluble in water. The nitrate (NO³⁻) ion is mobile. The ammonium ion (NH⁴⁺) 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. Phosphates, whether water or citrate soluble, are translocated in the soil over very short distances and are then immobilised. The dissolved potassium ion in the soil solution is adsorbed by clay minerals; where these are absent in light soils part of the potassium may be leached.

12.4 Bio-accumulation

The product does not show any bio-accumulation phenomena.

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 quality of the material, dispose of by use as a fertiliser on farm, by spreading thinly on open ground or to an authorised waste 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

14.1 UN classification

UN Classification No 2067. Class 5.1 Oxidising substance.

Designation/Shipping Name: Ammonium Nitrate Based Fertilizer (Yellow diamond label).

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

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 and Directives

Regulation 2003/2003/EC relating to fertilisers, OJ 304/L 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).

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 Of 31 December 2003 pages 97-105.

15.2 National Regulations

The Fertilisers Regulations 1991 and Amendment Regulations 1995 & 1998.
The Fertilisers (Sampling and Analysis) Regulations 1991
Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP 3)
The Carriage of Dangerous Goods and use of Transportable Pressure Equipment Regulations 2004.
The Carriage of Dangerous Goods and use of Transportable Pressure Equipment (Amendment) Regulations 2005.
Control of Major Accident Hazards (COMAH) Regulations 1999 and Amendment Regulations 2005
Notification of Installations Handling Hazardous Substances Regulations (1982), SI No. 1357 and amendment Regulations 2002 (NIHHS).

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

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.

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