

## **CODE OF PRACTICE**

**For the prevention of water pollution**

**from the storage and handling**

**of solid fertilisers**

### **Preface**

If you are a manufacturer, supplier, haulier or user of solid fertiliser you are handling materials which, if spilled in quantity, or involved in a fire, may cause damage to the environment. Any spillage of solid fertilisers could lead to the contamination of water and soil, because of the high concentration of nutrients. Packaging materials used in the supply of solid fertilisers may also adversely affect the environment if not disposed of correctly. This Code of Practice offers general guidance and has been drawn up to help you reduce the risk to the environment from the storage and handling of solid fertilisers.

There is a clear economic benefit to supplier and user alike in avoiding losses, whether from accident, poor management practices or vandalism. Any of these could result in pollution of water which could have serious consequences, both legal and financial. The costs of clean-up after a major spillage into water could be charged to the polluter.

With some forethought you should be able to answer the question: 'What would be the consequences of an incident such as fire or a spillage at your site for which you might be held responsible?'

You must know your site and the surrounding drainage system and know what to do and how to react to an accident or emergency, such as a fire, so as to minimise the chances of causing pollution. You must also be aware of legal obligations relating to the storage, transport and handling of those fertilisers classified as 'dangerous goods': Pre- planning is essential so that you avoid having to deal with a real incident unprepared. Such preparations should include knowledge of your legal obligations.

Pollution of surface waters such as brooks, streams and rivers by fertiliser is a serious matter but at least it is possible to monitor it directly and take remedial action, albeit at some cost. If groundwater is contaminated it is very difficult to monitor or remedy the effects except by costly techniques.

Pollution of groundwater is potentially serious because this water is used extensively for public drinking water supplies and for industrial and agricultural use. The Environment Agencies' have identified all groundwater resources and have specific policies for their protection through the control of activities where groundwater is vulnerable to potential sources of pollution.

Those producing or storing fertilisers must be aware of the proximity of surface and groundwater and their vulnerability so that this can be taken into account when siting manufacturing and storage facilities and drawing up emergency plans. The objective must be to ensure that pollution is prevented and that, in the event of a fire, major spillage or other incident, nutrient- enriched water is not allowed to wash through the soil directly or to enter drains and soakaways.

It is recommended that when siting any new store, specific information regarding the sensitivity of your site with respect to the water environment, is sought from the Environment Agencies.

The Fertiliser Manufacturers Association (FMA) also publishes a detailed Code of Practice for the Storage, Handling and Transportation of Solid Ammonium Nitrate Based Fertilisers and a Code of Practice & the Prevention of Water Pollution from the Storage and Handling of Fluid Fertilisers.

**Environment Agency England**

**Environment Agency Wales**

**Scottish Environment Protection Agency Environment and Heritage Service**

**Northern Ireland**

**April 1998**

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### **USERS AND SUPPLIERS**

**As with all nutrient sources, including fluid fertilisers, and organic manures and wastes, care must be taken with storage, handling and transportation.**

**Detailed guidelines are given in this Code but attention is drawn to four main points:**

**\*Stores must be sited with care,**

**\*Any spillage of fertiliser or water contaminated with fertiliser must be properly dealt with to avoid pollution,**

**\*Stores should be properly maintained and inspected and records kept,**

**\*Emergency procedures must be in place and understood by all who**

**may be involved.**

### **1. INTRODUCTION**

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1.1 This Code of Practice for the Prevention of Water Pollution from the Storage and Handling of Solid Fertilisers (referred to herein as the 'Code') is a practical guide to help Users and Suppliers avoid loss or spillage of fertilisers and control any other operations which could cause pollution.

**1.2 This Code does not cover guidance for the appropriate use of fertilisers and reference should be made to the Codes of Good Agricultural Practice (MAFF - England and Wales), Prevention of Environmental Pollution from Agricultural Activity (SOAEFD**

**-Scotland) and the Countryside Management Code (DANI - Northern Ireland) and also to published fertiliser recommendations (see Appendix 1). To obtain further advice with respect to the proper use of solid fertilisers contact a professionally qualified adviser, as registered under FACTS (The Fertiliser Advisers Certification and Training Scheme) (see Appendix 1).**

1.3 This Code is without prejudice to any legal obligations, safety requirements or other codes of practice.

1.4 Following this Code is not a defence against a charge of causing pollution, although it should

reduce the chance of pollution occurring.

1.5 Users and Suppliers should ensure that they carry adequate insurance cover against liability

for pollution.

1.6 This Code contains general guidance which applies to all Users and Suppliers together with specific reference to special precautions and legislation, where it applies.

1.7 This Code has been drawn up in consultation

with the Environment Agency England, the

Environment Agency Wales, the Scottish

Environment Protection Agency and the

Environment and Heritage Service Northern

Ireland. (The Environment Agencies) (see

Appendix 1).

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## **2 DEFINITIONS**

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Users and Suppliers

**For the purposes of this Code the term:-**

2.1 **'User'** shall mean farmers, growers, application

contractors and all those organisations or

individuals responsible for the end-use of Solid

Fertiliser.

2.2 **'Supplier'** shall refer to importers, distributors, merchants, hauliers or other organisations or individuals who store or supply the User with

Solid Fertiliser

2.3 **'Manufacturer'** shall mean any organisations or individuals who manufacture, mix or blend solid fertilisers for use in agriculture or

horticulture, whether for their own use or for use by others.

2.4 **'Solid Fertiliser'** shall include all manufactured

straight (single nutrient), complex compound, blended compound, organic and organic mineral (semi-organic) fertilisers. Soil conditioners containing plant nutrients, farm yard manures and slurries, sewage sludges, liming materials

etc., are specifically excluded.

2.5 **'Watercourse'** shall include all surface waters whether coastal waters estuaries, lakes, ponds, rivers, streams, canals, field ditches (even when

dry).

2.6 **'Groundwater'** shall be defined as all water which is below the surface of the ground in the saturation zone and in direct contact with the

ground or subsoil and/or held in underground rock formations (aquifers). For the purpose of this Code, it is considered that pollution of groundwater could result from incidents occurring where such aquifers outcrop at or

near the soil surface, or occurring within a minimum of 50 metres of a water abstraction borehole or where no protection of the underlying water exists, e.g. where there are soakaways, swallow holes or quarries.

2.7 **'Spillage'** shall mean a spillage of fertiliser and/or firewater which cannot be controlled and/or which involves significant loss of

fertiliser, potentially causing pollution of a Watercourse or of Groundwater

been used to fight a fire.

2.9 **'Site'** shall mean the premises operated by the Manufacturer, Supplier and br User for the production, storage and/or supply of Solid

Fertiliser

2.10 **'Ammonium Nitrate Fertilisers'** shall mean ammonium nitrate based fertiliser of high nitrogen content such as ammonium nitrate

and compounds containing more than 70% ammonium nitrate. These fertilisers are

classified as oxidising substances identified by the yellow oxidising label.

Note: For security reasons the sale of ammonium nitrate fertilisers is not allowed in Northern Ireland under the Explosives Regulations

(Northern Ireland) 1972, as amended (see appendix 2).

### **3 General Principles and Precautions**

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#### **3.1 General**

3.11 All procedures, equipment and installations should be designed to avoid Spillage of Solid Fertilisers in general and to prevent pollution

of Watercourses and Groundwater.

#### **3.2 Ammonium Nitrate Fertilisers**

**3.2.1 Ammonium Nitrate Fertilisers are not themselves combustible, but as they are oxidising agents they can assist other materials to burn, even if air is excluded. If involved in a fire, they may melt and decompose with the release of toxic fumes.**

**3.2.2 In the event of Ammonium Nitrate Fertilisers being involved in a fire appropriate procedures and resources should be in place which prevent molten material or Firewater from entering Watercourses and/or Groundwater.**

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**3.2.3 Under the impact experienced in normal handling. Ammonium Nitrate Fertiliser will not explode but there is a risk of explosion if it is allowed to heat up in a confined space e.g. in drains, pipes, plant or machinery particularly if it becomes contaminated.**

## **4 Siting of Solid Fertiliser Storage Facilities including Manufacturers'**

### **Premises, Merchant Stores, Port Authority Stores and Farm Stores**

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#### **4.1 General**

4.1.1 The suitable location of fertiliser stores and storage Sites, including uncovered storage areas is critical to reducing the risk of potential contamination of Watercourses or Groundwater in the event of a Spillage or

other incident. It should not be assumed that existing Sites, including plants, stores and storage areas are correctly sited, even if no pollution incident has arisen. Ideally, no Site should extend to within 10 metres of a Watercourse. This requirement should certainly apply to new Sites.

4.1.2 Existing Sites and preferably all new Sites should be in areas where Groundwater vulnerability is low and not in highly sensitive areas. Sensitive areas are in the proximity of boreholes, wells, springs, aquifer outcrops, soakaways, swallow holes, quarries or within 50 metres of abstraction for

potable supply. For further guidance on Groundwater protection contact the appropriate Environment Agency.

4.1.3 Consideration should be given as to where any spilled fertiliser, Firewater and/or general yard-washings and run-off would flow in the

event of a Spillage or other incident, including vandalism. Avoid locating Sites

near drains, channels and pits where molten ammonium nitrate from a fire could become confined.

4.1.4 Fertiliser stores and storage areas should be sited away from public access to minimise the risk of interference or vandalism. Sites

should be made as secure as feasible, with consideration given to 'intruder deterrent' lighting and fencing.

4.1.5 Good, well-constructed, vehicular access for large delivery and emergency vehicles is essential.

4.1.6 Sites for outdoor storage should be level and free from protruding stones. They should not be liable to flooding.

#### **4.2 Ammonium Nitrate Fertilisers**

4.2.1 **For the storage of Ammonium Nitrate Fertilisers exceeding 1000 tonnes, the**

**requirements of the Planning (Hazardous Substances) Act 1990 and Regulations 1992 and the Planning (Control of Major Accident Hazards) Regulations 1999, must be adhered to (see Appendix 2).**

## **5 Protection of Surrounding Area**

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5.1 The area surrounding any Site must be protected from potential pollution.

Containment is desirable in all areas where Watercourses and Groundwater are vulnerable.

Pollution is most likely to be caused by spilled fertiliser being washed away by rainwater or from Firewater used to control a fire at the Site. Solid Fertiliser Spillage should be recovered as soon as possible and disposed of appropriately, usually by spreading sparingly on a suitable growing crop such as grass.

5.2 Specific protection, to provide containment of any run-off, is desirable in all areas where Watercourses and Groundwater are vulnerable, and in particular where the site is located within the catchment of an abstraction borehole used for potable supply. Soil is a better and more absorbent temporary barrier

than sand.

## **6 Good Housekeeping Standards for Storage**

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6.1 General

6.1.1 Locate storage areas away from sources of heat or fire to minimise the risks of a fire involving fertiliser

6.1.2 An inventory of all fertiliser stored should be readily available in the event of fire.

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6.1.3 The store should be kept clean at all times and inspected regularly and particularly when maintenance is being carried out.

6.1.4 If possible, all fertiliser raw materials and products should be stored to the same standards as Ammonium Nitrate Fertilisers (away from incompatible and combustible materials) (see 6.2.3 below) in order to avoid contamination risks and fire hazard.

6.1.5 It is recommended that all floor and ground surfaces should be level and free from sharp objects which might tear or puncture bags. Rats and other rodents should be controlled to avoid damage to bags.

6.1.6 All bags should be handled with care to avoid damage. Pipes should be fitted over sharp edged tines on fork-lift trucks to avoid damage to the lifting loops. Damaged bags should be placed immediately into secondary bags to

prevent further Spillage.

6.1.7 Intermediate bulk containers (IBCs) should be stored in stable stacks (avoiding excessive height), according to published guidelines.

(Refer to the Recommendations for Handling Flexible IBCs; Flexible BC Association) (see Appendix 1). BC stacks should be positioned

so that the base of the stack remains dry.

6.1.8 50kg bags should preferably be stored on pallets to allow rapid relocation if necessary.

6.1.9 Ensure regular inspection and maintenance of electrical equipment and fittings.

6.1.10 All products stored outside for prolonged periods should be protected using shrink wrapping, covers or tarpaulins.

6.1.12 Spillages and sweepings should be cleared up promptly and disposed of in slurry pits or spread thinly on growing crops or grassland.

On no account should Spillages be hosed away or allowed to enter directly into surface drains or Watercourses or to gradually wash into soil.

6.1.13 Fertiliser sweepings (particularly of Ammonium Nitrate Fertiliser) should not be allowed to become contaminated with combustible materials. Sawdust should not be used as an of Practice for the Safe Handling of Ammonium Nitrate Fertiliser).

## **6.2 Ammonium Nitrate Fertilisers**

**6.2.1 All storage areas containing ammonium nitrate should be clearly marked as required by the Regulations (see 7.1.2 below).**

**6.2.2 Ammonium Nitrate Fertilisers should be stored in a single storey, well ventilated building constructed from materials that will not burn, such as concrete, bricks or steel. The store should be cleaned both before**

**deliveries of fertiliser are taken in and before any other materials are to be stored in the building.**

**6.2.3 To prevent contamination and avoid risk of fire. Ammonium Nitrate Fertilisers should be stored away from incompatible materials such as farm chemicals, oil and grease and combustible materials such as wood and**

**straw. Storage near gas pipelines should also be avoided.**

**6.2.4 Ammonium Nitrate Fertilisers, stored outside, should be protected from extreme temperature changes which can cause product degradation.**

## **7 Adherence to Storage Regulations**

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### **7.1 Ammonium Nitrate Fertilisers**

7.1.1 **Ammonium Nitrate Fertilisers must be stored according to the requirements of the HSE storage and handling note, ING 230L (see Appendix 1), supported by the guidance given in the FMA Handbook on the Safe Storage of Ammonium Nitrate-Based Fertilisers.**

7.1.2 **Any Site which contains or is likely to contain more than 25 tonnes of Dangerous Substances, of which Ammonium Nitrate Fertiliser is one, must be reported to the Local Fire Authority and the Local Office of the Health and Safety Executive (HSE). A warning sign must be posted at the site entrance as required by the Dangerous**

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**Sites] Regulations 1990. Guidance on these Regulations may be found in the HSE Guidance Note HS(R) 29 (see Appendix 1)**

7.1.3 **As a requirement of the COMAH Regulations any Site which contains or is likely to contain more than 1250 tonnes of ammonium nitrate fertiliser requires the operator to prepare a Major Accident Prevention Policy (MAPP) which sets out the essentials of a safety management system. For any Site with more than 5000 tonnes the operator must submit a Safety Report and an Emergency Plan to the Health & Safety Executive and must also supply information to the Local Authority to enable them to prepare an off-site emergency plan. These threshold limits reduce to 350 and 2500 tonnes respectively if the fertiliser does not meet the requirements for EC ammonium nitrate. For further details refer to the Control of Major Accident Hazards Regulations 1999. Guidance on the COMAH Regulations can be found in HSE Guidance Note L 111 (See Appendix 1)**

7.2 Fertiliser manufacturing plants are potential sources of environmental pollution and if the process involves specific chemical operations (as opposed to the simple blending of solid materials) they will need to be authorised by the Environment Agencies under the Environmental Protection Act 1990 (Part 1 Integrated Pollution Control] (see Appendix 8 Handling Procedures

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## 8.1 General

8.1.1 Manufacturers, Suppliers and Users should ensure that they have carried out an assessment of the risks as required by the **Control of Substances Hazardous to Health Regulations 1994. (COSHH)** (see Appendix

2) Suppliers have a legal duty under the **Consumer Protection Act 1987**, to provide

customers (see Appendix 3 for examples). These safety data sheets contain information on the chemical and physical properties and health hazards etc. Bags containing fertilisers produced by members of the Fertiliser Manufacturers Association maybe marked (FMA PSD5 Group 'X' to show which FMA Product Safety Data Sheet applies to that particular product. All the relevant safety equipment specified in the PSDS must be available and used when necessary.

## 8.2 Product in 50kg bags

8.2.1 All those responsible for handling 50 kg bags should ensure that they have carried out an assessment of the handling risks as required by the **Manual Handling Operations**

**Regulations 1992.** (see Appendix 2) Guidance on such assessments is contained in the HSE Guidance Note L 23 (see Appendix 1).

**8.3 Product in Intermediate Bulk Containers (IBCs)** - usually holding between 500 and 1000 kgs.

8.3.1 Suppliers and Users should follow Industry agreed procedures for handling IBCs and advice on the correct handling of IBCs supplied by the fertiliser manufacturer or other appropriate body (see Appendix 1).

#### **8.4 Product in bulk**

8.4.1 Solid fertilisers which are stored in bulk should be protected from moisture uptake and contamination by the use of tarpaulins or other covers.

##### **8.4.2 Ammonium Nitrate Fertilisers**

8.4.2.1 Ammonium nitrate should not be stored in bulk other than at the Site of manufacture. The Fertilisers Regulations 1991, (see Appendix 2) require that all Ammonium Nitrate Fertilisers supplied to farmers must be in packaged form.

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## **9 Deliveries and Transfers**

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### **9.1 General**

9.1.1 Packaged deliveries and despatches should be inspected to ensure that any damaged bags are removed and dealt with to avoid Spillage in transit or the storage area. All Spillages should be swept up immediately and kept safely prior to disposal.

9.1.2 The driver of a vehicle delivering Solid Fertiliser may be instructed by the Supplier to refuse to off-load the fertiliser if the condition or suitability of the store is considered inappropriate.

### **9.2 Ammonium Nitrate Fertilisers**

**9.2.1 The Carriage of Dangerous Goods by Road Regulations 1996, (Appendix 2) specify that vehicles used to transport 500 kgs or more of Ammonium Nitrate Fertiliser (see 2.10) carry the appropriate warning placards, fire extinguishers and written hazard information.**

**9.2.2 The Carriage of Dangerous Goods by Road (Driver Training) Regulations 1996 require the driver of a vehicle carrying Ammonium Nitrate Fertilizers (see 2.10) on a vehicle having a permissible maximum weight exceeding 3.5 tonnes, to hold a vocational training certificate.**

**9.2.3 Partial exemption from the requirements in 9.2.1 and 9.2.2 is allowed where not more than 10 tonnes of fertiliser is being moved between pieces of land occupied for agricultural purposes, within a radius of 12 km, in an agricultural vehicle.**

**9.2.4 The Transport of Dangerous Goods (Safety Advisers) Regulations 1999 require companies involved in the consigning, loading, unloading and transport of dangerous goods to appoint a Dangerous Goods Safety Adviser (DGSA) who must have a vocational training certificate. The DGSA does not necessarily have to be an employee.**

## **10 Loading and Unloading Procedures**

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On-Site loading and unloading procedures should be defined to minimise the possibility of accidental Spillage from damaged bags. Emergency procedures should be drawn up for use in the event of an incident occurring during the handling of fertilisers. The Manufacturer should be consulted for advice on such procedures.

## **11 Disposal of Waste Packaging**

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Suppliers responsible for handling more than 50 tonnes of packaging per year have a recovery obligation under the provisions of the Producer Responsibility Regulations 1997. Farmers who are excluded from this requirement, should ensure that all waste packaging is legally disposed of and not burnt. Use should be made of plastics recovery schemes whenever possible or commercial waste disposal.

## **12 Incident Management and Reporting**

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12.1 Manufacturers and Suppliers should ensure that all the necessary and agreed resources are available for the management of the procedures required for a road traffic or other incident during transit or an on-Site incident. The procedures should include the nomination of a responsible person to co-ordinate the management and reporting of any incident

**12.2 Report any incident of environmental pollution by contacting the appropriate Environment Agency. For emergency telephone numbers see Appendix 1.**

## **13 Training**

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## 13.1 General

Manufacturers and Suppliers should ensure that all employees and subcontractors involved in the storage, sale, distribution and application of fertilisers are adequately informed of the risks and the appropriate procedures designed to avoid the pollution of Watercourses and Groundwater. All employees and subcontractors should be adequately informed about the appropriate action to take in the event of a fire involving High Ammonium Nitrate Fertilisers.

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## 13.2 Ammonium Nitrate Fertilisers

**Hauliers must also ensure that any driver employed to transport Ammonium Nitrate Fertilisers on public highways has a valid vocational training certificate.**

**(See 9.2.2 above).**

## 14 Farm/User Support

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Manufacturers and Suppliers should provide advice and assistance to their customers and contractors to encourage an awareness of the importance of careful storage, handling and use of fertilisers to prevent pollution. Attention is drawn to obligations under the Consumer Protection Act 1987, to provide customers with Product Safety Data Sheets. Consideration should be given to the distribution of this Code of Practice to all customers.

## 15 Application to Crops

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15.1 Users should choose a fertiliser of a quality that can be spread accurately and evenly.

15.2 Fertiliser spreading equipment should be well maintained, properly set and calibrated. The use of tilt mechanisms, deflector boards or other such devices will prevent the unwanted and potentially detrimental effects of fertiliser applications to hedge bottoms or ditches.

15.3 Users should take account of the prevailing and forecasted weather to minimise the risk of uneven fertiliser application and potential fertiliser loss.

15.4 To obtain further advice with respect to the proper application of solid fertilisers contact a professionally trained adviser registered under FACTS (The Fertiliser Advisers Certification and Training Scheme).

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## **Appendix 1 - Sources of Information**

**Code of Good Agricultural Practice for the Protection of Water**, MAFFIWOAC, 1991, (Rev 1998), P80587

**Code of Good Agricultural Practice for the Protection of Air**, MAFF/WOAD, 1992, (Rev 1998), PB 0618

**Code of Good Agricultural Practice for the Protection of Soil**, MAFF/WOAD, 1993, (Rev 1998), PB 0617

**Prevention of Environmental Pollution from Agricultural Activity**. Scottish Office (SOAEFD), 1997

**Countryside Management Code. Prevention of Pollution of Water**, No 9. Fertilisers, DANI, 1998, (Northern Ireland), Dd 088158

**Fertiliser Recommendations** for Agricultural and Horticultural Crops. MAFF Reference Book 209 (6th Edition), 1994, The Stationery Office, ISBN 0 11 242935 1

SAC Technical Notes: Fertiliser Series - Only available to SAC Subscribers (Scotland)

Fertiliser Recommendations (Northern Ireland), DANI, 1992, No 187

Code of Practice for the Storage, Handling and Transportation of Solid Ammonium Nitrate-Based Fertilisers, Fertiliser Manufacturers' Association\*

**Health and Safety Legislation - A Review**, Fertiliser Manufacturers' Association\*

**Recommendations for Handling Flexible Intermediate Bulk Containers**. Flexible Intermediate Bulk Container Association, 1990

**Best Available Techniques for Pollution Prevention and Control in the European Fertilizer Industry**, EFMA, 2000

(Series of 8 Booklets)

**Legislation Affecting the Production, Distribution, Storage and Use of Fertilisers in the 1990s**, D J Heather and G E N Lance, The Fertiliser Society, Proceedings No 352, 1994

**The Development of Legislation Affecting the Production, Distribution, Storage and Use of Fertilisers -The UK Experience**, D J Heather, The Fertiliser Society,

Proceedings No 267, 1988

**Guidance Note: IPR 4/16 The Manufacture of Chemical**

**Fertilisers or their Conversion into Granules**, The

Stationery Office, London, 1993

**Manual Handling - Guidance on Regulations L23, Health & Safety Executive 1992** The Stationery Office, London 1992

**Getting to Grips with Manual Handling INDG 143 (rev) Health and Safety Executive 2000.**

**Storing and Handling Ammonium Nitrate. IND(G) 230L**, Health and Safety Executive, 1997

**Guide to the Notification and Marking of Sites Regulations 1999**, 1999. L 111, Health & Safety Executive 1999

Guide to the Control of Major Accident Hazards Regulations, HS(R) 21 (Rev). Health and Safety Executive, 1984 (Rev) 1990

**Guidance Note: The Control of Fire-water Run-off from CIMAH Sites to Prevent Environmental Damage**, Health and Safety Executive, 1995 EH 70, 1995

**Code of Practice for the Protection of Water Pollution from the Storage and Handling of Fluid Fertilisers** Fertiliser Manufacturers Association, 1995, (Rev) 1998

**Policy and practice for the Protection of Groundwater**, 1992 (available from The Stationery Office: ISBN 011885822X) with accompanying Groundwater Vulnerability

Maps

\* In revision

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APPENDIX

## **THE ENVIRONMENT AGENCIES**

### **Environment Agency England**

**Free emergency telephone number: 0800 807060**

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Head Office Anglian

Rivers House Kingfisher House

Waterside Drive Goldhay Way

Aztec West Orton Goldhay

Almondsbury Peterborough

Bristol BS10 4U0 PE2 SZR

Tel: 01454 624400 Tel: 01733 371811

North West South West

Richard Fairclough House Manley House

Knutsford Road Kestrel Way

Warrington WA4 1 HG Exeter EX2 7LQ

Tel: 01925 653999 Tel: 01392 444000

North East

Rivers House

21 Park Square South

Leeds 151 20G

Tel: 01132440191

Midlands

Sapphire East

550 Streetsbrook Road

Solihull

West Midlands 891 IQT

Tel: 01217 112324

Southern

Guildbourne House

Chatsworth Road

Worthing

West Sussex BN11 1LD

Tel: 01903 820692

Thames

Kings Meadow House

Kings Meadow Road

Reading ROI 8D0

Tel: 01189 535000

**Environment Agency Wales**

**Asiantaeth yr Amgylchedd**

**Free emergency telephone number: 0800 807060**

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Rivers House

St Mellons Business Park

St Mellons

Cardiff CF3 OLT

Tel:01222 770088

Plas-yr-Afon

Parc Busnes Llanelwng

Heol Fortren

Caerdydd CR3 OLT

**Scottish Environment Protection Agency**

**Free emergency telephone number: 0346 732271**

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Head Office East

Erskine Court Clearwater House

The Castle Business Park Heriot-Watt Research Park

Stirling FK9 4TR Avenue North, Riccarton

Tel: 01788 457700 Edinburgh EH14 4AP

Tel: 01314 497296

North

Graesser House West

Fodderty Way 5 Redwood Crescent

Dingwall Business Park Peel Park

Dingwall IV15 9XB East Kilbride 674 5PP

Tel: 01349 662021 Tel: 01355 574200

**Environment and Heritage Service**

**Northern Ireland**

**Free emergency telephone number 01232 757414**

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Department of the Environment

for Northern Ireland

Calvert House

23 Castle Place

Belfast BT1 1FY

Tel: 01232 254868

**THE FACTS OFFICE**

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34 St John Street

Ashbourne

Derbyshire DES iGH

Tel: 01335343945

FACTS CERTIFICATION

Fertiliser

Adviser

Certification

Training

Scheme

## **Appendix 2**

### **Regulations**

#### **Primary Legislation**

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**Agriculture Act 1970**

**Consumer Protection Act 1 1987**

**Control of Pollution Act 1974, as amended**

**Environmental Protection Ad 1990**

**Planning (Hazardous Substances) Act 1990**

**Water Resources Act (England and Wales) 1991**

**Water Act (Northern Ireland) 1972\***

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#### **Regulations**

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**Control of Industrial Major Accident Hazards Regulations 1984, SI No 1902**

**Control of Major Accident Hazards Regulations 1999 (COMAH) S I No 743**

**Dangerous Substances (Notification and Marking of Sites) Regulations 1990, S I No 304**

**Dangerous Substances in Harbour Areas Regulations 1987, S I No 37**

**Environmental Protection (Prescribed Processes & Substances) Regulations 19191, S I No 472**

**Explosives Regulations (Northern ireland] 1972, as amended, S I No 118**

**Manual Handling Operations Regulations 1992, S I No 2793**

**Planning (Hazardous Substances) Regulations 1992, SI No 656**

**Planning (Control of major Accident Hazards) Regulations 1999 S I No 981**

**The Carriage of Dangerous Goods by Road Regulations, 1996, S I 2095**

**(The Carriage of Dangerous Goods by Road (Driver Training)) Regulations, 1996, SI No 2094**

**Transport of Dangerous Goods (Safety Advisors) Regulations 1999 S I No 257**

**The Fertilisers Regulations 1991, as amended, SI No 2197**

**Copies of all the above can be obtained from The Stationery Office**

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## **Appendix 3 Product Safety Data Sheets**

### **Sample Product Safety Data Sheets for Solid Fertilisers PSDS GROUP 1 PRODUCT**

#### **FMA PRODUCT SAFETY DATA SHEET – GROUP 1**

##### **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

##### **1. IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

###### **1.1 Identification of the Product**

Products in Group 1 are solid straight nitrogen fertilisers based on ammonium nitrate and which are classified as oxidising substances. They are identified as such by the yellow oxidising symbol and the relevant UN number (see Section 14).

###### **NOTE:**

*The nitrogen content must not be less than 20%.*

The designation includes mixtures of ammonium nitrate with chemically inert materials or limestone and/or dolomite. It covers a range of products including UN No 2067, 2068 and 2069 products. However, in practice, products containing limestone and/or dolomite and with nitrogen content <28% are designated as Calcium Ammonium Nitrate (CAN). They have no UN numbers assigned; a specific Safety Data Sheet (PSDS Group 3) has been prepared for these products. This Product Safety Data Sheet also applies to products which have UN No 2072 (see Section 14)

###### **1.2 Company**

See details below

##### **COMPOSITION/INFORMATION ON INGREDIENTS**

These products will contain ammonium nitrate and may contain some or all of the following ingredients:-

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

### 3. HAZARDS IDENTIFICATION

#### 3.1 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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

Molten material: Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

#### 3.2 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.

### 4. FIRST AID MEASURES

#### 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. 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.

#### Fire and Thermal Decomposition Products

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

### 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:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.
2. Call the fire brigade.
3. Use plenty of water.
4. Open doors and windows to give maximum ventilation.
5. **Do not** use chemical extinguishers or foams or attempt to smother the fire with steam or sand.
6. **Do not** allow molten fertiliser to run into drains. If safe to do so prevent the contamination of the fertiliser by oil and other combustible materials. If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately. Note also first aid precautions (4).

## 6. ACCIDENTAL RELEASE MEASURES

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container. Do not allow to mix with sawdust and other combustible or organic substances.

## 7. HANDLING AND STORAGE

7.1 *Handling*: Avoid excessive generation of dust. Avoid contamination by materials such as diesel oil, grease and other combustible materials. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

7.2 *Storage*: The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. 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. Further guidance is given in HSE Guidance IND(G)230L.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

### 8.1 Occupational exposure limits

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### 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.

## 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)
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC) The fertilizer has a high resistance to detonation This resistance is decreased by the presence of contaminants 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
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 <sup>3</sup>
Solubility in water	Pure ammonium nitrate: 1900g/l of water at 20°C Hygroscopic - readily picks up moisture from the air.

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Oxidising agent therefore can enhance the combustion of combustible materials. Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

Not itself combustible. Melts and decomposes when heated strongly with molten material starting to form between 160 - 165°C. On decomposition gives off water vapour and toxic fumes which may contain oxides of nitrogen and ammonia. Decomposition is accelerated by a number of substances such as acids; carbonaceous materials; chromates; zinc, copper and their alloys; chlorates and reducing agents.

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 (eg in tubes or drains) may lead to a violent reaction or explosion, especially if there is contamination by substances mentioned above.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## TOXICOLOGICAL INFORMATION

### 11.1 General

Ammonium nitrate itself is basically harmless when handled correctly. When heated it can give off toxic gases. See Section 3.1.

### 11.2 Toxicity Data

LD50 (oral, rat) > 2000mg/kg  
May cause methæmoglobinæmia See Section 3.1.

## 12. ECOLOGICAL INFORMATION

### 12.1 Mobility

Very soluble in water. The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

### 12.2 Persistence/Degradability

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

**12.3 Bio-accumulation** The product does not show any bio-accumulation phenomena.

### 12.4 Ecotoxicity

Low toxicity to aquatic life. TLM 96 between 10-100ppm.

## 13. DISPOSAL CONSIDERATIONS

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

## 14. TRANSPORT INFORMATION

### 14.1 UN classification

Class 5, Division 5.1 Oxidizing Substances UN Nos. 2067, 2068, 2069 and 2072 depending on composition. See Section 14.2.

They are not classified as hazardous material for supply purposes according to EC Directive 67/548/EEC and CHIP

### 14.2 Details

Composition	UN No	Class	Transport Mode	Particulars
>90% AN >0.2% combustible Inert materials	2067	5.1 (Type A1)	ADR/RID	Item 21° (c) IMDG: Packaging gr: III Stowage cat: A Code page: 5123(94) Bulk shipments BC – code, Appendix B
>70 and <90% AN >0.4% combustible Inert materials	2067	5.1 (Type A1)	as above	
>80 and 90% AN >0.4% combustible Limestone/dolomite	2068	5.1 (Type A2)	as above	
>45 and <70% AN	2069	5.1	as above	

>0.4% combustible  
Ammonium sulphate

(Type  
A3)

as above

Do not transport with combustible materials and  
farm or other chemicals such as acids;  
carbonaceous materials; chromates; zinc, copper  
and their alloys; chlorates and reducing agents.  
Ensure that the transport is clean before loading  
the product.

## 15. REGULATORY INFORMATION

### 15.1 EC Directives

76/116/EEC (Relating to fertilisers)  
80/876/EEC (Straight Ammonium Nitrate)  
87/94/EEC (Resistance to detonation)  
96/82/EC (Control of Major Accident Hazards)

### 15.2 National Regulations

The Fertilisers Regulations 1991 and subsequent  
amendments

Fertilisers containing  
AN not otherwise specified 2072 5.1

The Control of Major Accident Hazards  
Regulations 1999

## 16 OTHER INFORMATION

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 FMA's knowledge  
correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA  
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.

## **PSDS GROUP 2 PRODUCT**

### **FMA PRODUCT SAFETY DATA SHEET - GROUP 2**

#### **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

#### **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

##### **1.1Identification of the Product**

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

##### **1.2Company**

See details below

#### **2.COMPOSITION/INFORMATION ON INGREDIENTS**

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.

#### **3. HAZARDS IDENTIFICATION**

### 3.1 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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

*Molten material:* Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

### 3.2 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.

## FIRST AID MEASURES

### 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. 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.

### **Fire and Thermal Decomposition Products**

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

### **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:-

Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.

2.Call the fire brigade.

3.Use plenty of water.

4.Open doors and windows to give maximum ventilation.

5.**Do not** use chemical extinguishers or foams or attempt to smother the fire with steam or sand.

6.**Do not** allow molten fertiliser to run into drains.

If safe to do so prevent the contamination of the fertiliser by oil and other combustible materials. If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## **6. ACCIDENTAL RELEASE MEASURES**

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container. Do not allow to mix with sawdust and other combustible or organic substances.

## **7. HANDLING AND STORAGE**

*7.1 Handling:* Avoid excessive generation of dust. Avoid contamination by materials such as diesel oil, grease and other combustible materials. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. 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. Further guidance is given in HSE Guidance IND(G)230L.

## **8. EXPOSURE CONTROL/PERSONAL PROTECTION**

### **8.1 Occupational exposure limits**

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA  $10\text{mg}/\text{m}^3$ .

### **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.

## 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 160-170°C depending on moisture content
Boiling point	> 210°C (decomposes).
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC). The fertilizer has a high resistance to detonation. This resistance is decreased by the presence of contaminants 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.
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 <sup>3</sup> .
Solubility in water	Soluble in water, extent depends on composition Most formulations are hygroscopic.

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Oxidising agent therefore can enhance the combustion of combustible materials. Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

Not itself combustible. Melts and decomposes when heated strongly with molten material starting to form between 160 - 165° C. On decomposition gives off water vapour and toxic fumes which may contain oxides of nitrogen and ammonia. Decomposition is accelerated by a number of substances such as acids; carbonaceous materials; chromates; zinc, copper and their alloys; chlorates and reducing agents.

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 (eg in tubes or drains) may lead to a violent reaction or explosion, especially if there is contamination by substances mentioned above.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## **11. TOXICOLOGICAL INFORMATION**

### **11.1 General**

See Section 3.1.

### **11.2 Toxicity Data**

Product toxicity will depend on the composition.

Ammonium nitrate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

May cause methaemoglobinæmia

See Section 3.1.

Monoammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Diammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Potassium chloride or sulphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Calcium nitrate:

LD<sub>50</sub> (oral, rat) 2100mg/kg

## **12. ECOLOGICAL INFORMATION**

### **12.1 Mobility**

Very soluble in water. The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

## **12.2 Persistence/Degradability**

The nitrate ion is mobile; the ammonium ion is adsorbed by soil particles. 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.

## **12.3 Bio-accumulation**

The product does not show any bio-accumulation phenomena.

## **12.4 Ecotoxicity**

Low toxicity to aquatic life.

## **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

## **14. TRANSPORT INFORMATION**

### **14.1 UN classification**

UN Classification No 2070. Class 5.1 Oxidising substance. (Yellow diamond label).

Transport Classification ADR/RID No 5.1, Item 21° (c).

**Do not** transport with combustible materials and farm or other chemicals such as acids; carbonaceous materials; chromates; zinc, copper and their alloys; chlorates and reducing agents. Ensure that the transport is clean before loading the product.

## **15. REGULATORY INFORMATION**

### **15.1 EC Directives**

76/116/EEC (Relating to fertilisers)

96/82/EC (Control of Major Accident Hazards)

### **15.2 National Regulations**

The Fertilisers Regulations 1991 and subsequent amendments.

The Control of Major Accident Hazards Regulations 1999

## **16. OTHER INFORMATION**

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 FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA 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.

## **PSDS GROUP 3 PRODUCT**

### **FMA PRODUCT SAFETY DATA SHEET - GROUP 3**

#### **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

#### **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

##### **Identification of the Product**

Products in Group 3 are solid straight nitrogen fertilisers with less than 70% ammonium nitrate and not more than 0.4% total combustible materials with inert materials or with less than 80% ammonium nitrate with limestone or dolomite filler and not more than 0.4% total combustible material or with less than 45% ammonium nitrate with ammonium sulphate and not more than 0.4% combustible material.

##### **1.2Company**

See details below

#### **2.COMPOSITION/INFORMATION ON INGREDIENTS**

These products may contain some or all of the following ingredients in addition to the ammonium nitrate:

Ammonium sulphate, limestone, dolomite, gypsum (calcium sulphate), calcium nitrate, Inert fillers such as sand, coating materials such as oil, amine, clay or talc, secondary nutrients and/or micro-nutrients.

#### **3. HAZARDS IDENTIFICATION**

##### **3.1 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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

*Molten material:* Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

### **3.2 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.

## **4. FIRST AID MEASURES**

### **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. 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.

### **Fire and Thermal Decomposition Products**

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

## **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:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.

2. Call the fire brigade.
3. Use plenty of water.
4. Open doors and windows to give maximum ventilation.
5. **Do not** use chemical extinguishers or foams or attempt to smother the fire with steam or sand.
6. **Do not** allow molten fertiliser to run into drains.

If safe to do so prevent the contamination of the fertiliser by oil and other combustible materials. If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## **6. ACCIDENTAL RELEASE MEASURES**

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container. Do not allow to mix with sawdust and other combustible or organic substances.

## **7. HANDLING AND STORAGE**

*7.1 Handling:* Avoid excessive generation of dust. Avoid contamination by materials such as diesel oil, grease and other combustible materials. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. Buildings used for storage should be dry and well ventilated, stacks therein should be at least 1 metre from walls, eaves and beams. Further storage guidance is given in HSE Guidance IND(G)230L.

## **8. EXPOSURE CONTROL/PERSONAL PROTECTION**

### **8.1 Occupational exposure limits**

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### **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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White, off-white or grey granules or prills unless deliberately coloured during manufacture.
Odour	Odourless.
pH water solution (100g/l)	> 4.5.
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC). The fertilizer has a high resistance to detonation. This resistance is decreased by the presence of contaminants 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.
Oxidizing properties	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 <sup>3</sup>
Solubility in water	Ammonium nitrate highly soluble: Product hygroscopic. Calcium and magnesium carbonates sparingly soluble

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Oxidising agent therefore can enhance the combustion of combustible materials. Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

Not itself combustible. Melts and decomposes when heated strongly with molten material starting to form between 160 - 165° C. On decomposition gives off water vapour and toxic fumes which may contain oxides of nitrogen and ammonia. Decomposition is accelerated by a number of substances such as acids; carbonaceous materials; chromates; zinc, copper and their alloys; chlorates and reducing agents.

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 (eg in tubes or drains) may lead to a violent reaction or explosion, especially if there is contamination by substances mentioned above.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 General

See Section 3.1.

### 11.2 Toxicity Data

LD50 (oral, rat) > 2000mg/kg

May cause methæmoglobinæmia See Section 3.1.

## **12. ECOLOGICAL INFORMATION**

### **12.1 Mobility**

Very soluble in water. The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

### **12.2 Persistence/Degradability**

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

### **12.3 Bio-accumulation**

The product does not show any bio-accumulation phenomena.

### **12.4 Ecotoxicity**

Low toxicity to aquatic life. TLM 96 between 10-100ppm

## **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

## **14. TRANSPORT INFORMATION**

### **14.1 UN classification**

Not classified, i.e. considered non-hazardous material according to the UN Orange Book and international transport codes e.g. RID (rail), ADR (road) and IMDG (sea).

## **15. REGULATORY INFORMATION**

### **15.1 EC Directives**

76/116/EEC (Relating to fertilisers)

### **15.2 National Regulations**

The Fertilisers Regulations 1991 and subsequent amendments

## **16. OTHER INFORMATION**

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 FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA 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

## **PSDS GROUP 4 PRODUCT**

### **FMA PRODUCT SAFETY DATA SHEET - GROUP 4**

#### **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

#### **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

##### **1.1Identification of the Product**

Products in Group 4 are solid compound fertilisers (NPK, NP, NK) with not more than 70% ammonium nitrate. They are not capable of self sustaining decomposition ("cigar-burning").

##### **1.2Company**

See details below

#### **2.COMPOSITION/INFORMATION ON INGREDIENTS**

These products may contain some or all of the following ingredients in addition to the ammonium nitrate. Ammonium sulphate, urea, mono and di-ammonium phosphate, normal (single) superphosphate, triple superphosphate, phosphate rock, 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.

#### **3. HAZARDS IDENTIFICATION**

##### **3.1 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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

*Molten material:* Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

### **3.2 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.

## **4.FIRST AID MEASURES**

### **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. 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.

### **Fire and Thermal Decomposition Products**

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

## **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:-

Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.

2.Call the fire brigade.

3.Use plenty of water.

4. Open doors and windows to give maximum ventilation.

5. **Do not** use chemical extinguishers or foams or attempt to smother the fire with steam or sand.

6. **Do not** allow molten fertiliser to run into drains.

If safe to do so prevent the contamination of the fertiliser by oil and other combustible materials. If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## **6. ACCIDENTAL RELEASE MEASURES**

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container. Do not allow to mix with sawdust and other combustible or organic substances.

## **7. HANDLING AND STORAGE**

*7.1 Handling:* Avoid excessive generation of dust. Avoid contamination by materials such as diesel oil, grease and other combustible materials. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. Buildings used for storage should be dry and well ventilated, stacks therein should be at least 1 metre from walls, eaves and beams. Further storage guidance is given in HSE Guidance IND(G)230L.

## **EXPOSURE CONTROL/PERSONAL PROTECTION**

### **Occupational exposure limits**

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### **Precautionary and engineering measures**

Avoid high dust concentration and provide ventilation where necessary.

### **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.

## **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 160-170°C depending on moisture content
Boiling point	> 210°C (decomposes).
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC). The fertilizer has a high resistance to detonation. This resistance is decreased by the presence Of contaminants 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.
Bulk density	Normally between 900-1100kg/m <sup>3</sup> .
Solubility in water	Soluble in water, extent depends on composition Most formulations are hygroscopic.

## STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Oxidising agent therefore can enhance the combustion of combustible materials. Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

Not itself combustible. Melts and decomposes when heated strongly with molten material starting to form between 160 - 165° C. On decomposition gives off water vapour and toxic fumes which may contain oxides of nitrogen and ammonia. Decomposition is accelerated by a number of substances such as acids; carbonaceous materials; chromates; zinc, copper and their alloys; chlorates and reducing agents.

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 (eg in tubes or drains) may lead to a violent reaction or explosion, especially if there is contamination by substances mentioned above.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 General

See Section 3.1.

### Toxicity Data

Product toxicity will depend on the composition.

Ammonium nitrate:

LD50 (oral, rat) > 2000mg/kg

May cause methæmoglobinæmia See Section 3.1.

Monoammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Diammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Potassium chloride or sulphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Calcium nitrate:

LD<sub>50</sub> (oral, rat) 2100mg/kg

### **ECOLOGICAL INFORMATION Mobility**

Very soluble in water. The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

### **Persistence/Degradability**

The nitrate ion mobile; the ammonium ion is adsorbed by soil particles. 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.

### **12.3 Bio-accumulation**

The product does not show any bio-accumulation phenomena.

### **12.4 Ecotoxicity**

Low toxicity to aquatic life.

## **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

## **TRANSPORT INFORMATION**

### **14.1 UN classification**

Classified as non-hazardous.

Avoid transport with other materials where there is undue risk of contamination. Ensure that the transport is clean before loading the product.

## **REGULATORY INFORMATION**

### **EC Directives**

76/116/EEC (Relating to fertilisers)

### **15.2 National Regulations**

The Fertilisers Regulations 1991 and subsequent amendments

## **PSDS GROUP 5 PRODUCT**

### **FMA PRODUCT SAFETY DATA SHEET - GROUP 5**

## **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

## **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

### **1.1Identification of the Product**

Products in Group 5 are solid compound fertilisers (NPK, NP, NK) with not more than 70% ammonium nitrate which are capable of self sustaining decomposition ("cigar-burning").

### **1.2Company**

See details below

## **2.COMPOSITION/INFORMATION ON INGREDIENTS**

These products may contain some or all of the following ingredients in addition to the ammonium nitrate. Ammonium sulphate, mono and di-ammonium phosphate, normal (single) superphosphate, triple superphosphate, phosphate rock, 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.

## **3. HAZARDS IDENTIFICATION**

### **3.1 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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

*Molten material:* Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

### **3.2 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.

## **4. FIRST AID MEASURES**

### **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. 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.

### **Fire and Thermal Decomposition Products**

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

## **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:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.
2. Call the fire brigade.
3. Use plenty of water.

4. Open doors and windows to give maximum ventilation.

5. **Do not** use chemical extinguishers or foams or attempt to smother the fire with steam or sand.

6. **Do not** allow molten fertiliser to run into drains.

If safe to do so prevent the contamination of the fertiliser by oil and other combustible materials. If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## **6. ACCIDENTAL RELEASE MEASURES**

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container. Do not allow to mix with sawdust and other combustible or organic substances.

## **7. HANDLING AND STORAGE**

*7.1 Handling:* Avoid excessive generation of dust. Avoid contamination by materials such as diesel oil, grease and other combustible materials. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area Buildings used for storage should be dry and well ventilated, stacks therein should be at least 1 metre from walls, eaves and beams. Further storage guidance is given in HSE Guidance IND(G)230L.

## **8. EXPOSURE CONTROL/PERSONAL PROTECTION**

### **8.1 Occupational exposure limits**

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### **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.

## **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 160-170°C depending on moisture content
Boiling point	> 210°C (decomposes).
Explosive properties	Not explosive as per EEC test A14 (67/548/EEC). The fertilizer has a high resistance to detonation. This resistance is decreased by the presence of contaminants 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.
Bulk density	Normally between 900 – 1100 kg/m <sup>3</sup>
Solubility in water	Soluble in water, extent depends on composition Most formulations are hygroscopic.

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Oxidising agent therefore can enhance the combustion of combustible materials. Capable of self-sustained decomposition, especially when the product is in bulk form. A moderate source of heat such as a buried light bulb can initiate decomposition which can continue even when the heat source is removed. Liberates ammonia when in contact with alkalis eg Caustic Soda, Soda Ash.

Not itself combustible. Melts and decomposes when heated strongly with molten material starting to form between 160 - 165° C. On decomposition gives off water vapour and toxic fumes which may contain oxides of nitrogen and ammonia. Decomposition is accelerated by a number of substances such as acids; carbonaceous materials; chromates; zinc, copper and their alloys; chlorates and reducing agents.

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 (eg in tubes or drains) may lead to a violent reaction or explosion, especially if there is contamination by substances mentioned above.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 General

See Section 3.1.

### Toxicity Data

Product toxicity will depend on the composition.

Ammonium nitrate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

May cause methæmoglobinæmia See Section 3.1.

Monoammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Diammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Potassium chloride or sulphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Calcium nitrate:

LD<sub>50</sub> (oral, rat) 2100mg/kg

## **12. ECOLOGICAL INFORMATION**

### **12.1 Mobility**

Very soluble in water. The nitrate ion is mobile. The ammonium ion is adsorbed by soil.

### **12.2 Persistence/Degradability**

The nitrate ion mobile; the ammonium ion is adsorbed by soil particles. 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.

### **12.3 Bio-accumulation**

The product does not show any bio-accumulation phenomena.

### **12.4 Ecotoxicity**

Low toxicity to aquatic life.

## **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

## **14. TRANSPORT INFORMATION**

### **14.1 UN classification**

Classified as miscellaneous dangerous substances.

UN No 2071 Class 9.

Avoid transport with other materials where there is undue risk of contamination. Ensure that the transport is clean before loading the product.

## **15. REGULATORY INFORMATION**

### **15.1 EC Directives**

76/116/EEC (Relating to fertilisers)

### **15.2 National Regulations**

The Fertilisers Regulations 1991 and subsequent amendments.

## **OTHER INFORMATION**

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 FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA 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

## **PSDS GROUP 6 PRODUCT**

### **FMA PRODUCT SAFETY**

## **DATA SHEET - GROUP 6**

## **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

## **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

## 1.1 Identification of the Product

Products in Group 6 are the straight nitrogen products, urea and ammonium sulphate and will be identified as such.

## 1.2 Company

See details below

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

These products may be essentially pure and will contain urea (Total nitrogen 46%) or ammonium sulphate (Total nitrogen 21%) as essential ingredients..

## 3. HAZARDS IDENTIFICATION

### 3.1 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 effect.

Large quantities may give rise to gastro-intestinal disorders.

*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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

Inhalation of decomposition gases (eg in a fire) may cause serious lung effects.

### 3.2 Environment

Urea and ammonium sulphate are nitrogen fertilisers. Heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters. See Section 12.

## 4. FIRST AID MEASURES

### 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. 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.

### Fire and Thermal Decomposition Products

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

## 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:-

Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.

2.Call the fire brigade.

3.Use plenty of water.

4.Open doors and windows to give maximum ventilation.

5.**Do not** allow molten fertiliser to run into drains.

If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## 6. ACCIDENTAL RELEASE MEASURES

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container.

## 7.HANDLING AND STORAGE

*7.1 Handling:* Avoid excessive generation of dust. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. Buildings used for storage should be dry and well ventilated, stacks therein should be at least 1 metre from walls, eaves and beams. Further storage guidance is given in HSE Guidance IND(G)230L

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

### 8.1 Occupational exposure limits

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### 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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Solid uniform prills, granules or crystals pale yellow/brown to white in colour unless deliberately coloured during manufacture.
Odour	Odourless.
pH water solution (100g/l)	Urea 9 - 10 Ammonium sulphate 4 – 6.
Melting point	Urea 133°C (Decomposes) Ammonium sulphate 235°C (Decomposes)
Bulk density	Urea 700-780kg/m <sup>3</sup> . Ammonium sulphate 1000 – 1100kg/m <sup>3</sup>
Solubility in water	Urea 1080g/l at 20°C Ammonium sulphate 760g/l at 20°C

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions. Urea reacts with sodium or calcium hypochlorite to form explosive nitrogen trichloride. Ammonium sulphate liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 General

See Section 3.1.

### Toxicity Data

Urea and ammonium sulphate

LD50 (oral, rat) > 2000mg/kg

## 12. ECOLOGICAL INFORMATION

### 12.1 Mobility

Soluble in water. Predicted to have a high mobility in soil.

### 12.2 Persistence/Degradability

Substantially bio-degradable in water.

### **12.3 Bio-accumulation**

Low potential for bio-accumulation.

### **12.4 Ecotoxicity**

Urea: Has low intrinsic aquatic toxicity but will exert a substantial oxygen demand when significant quantities, as in a spillage, reach a watercourse and may cause damage to aquatic life.

Ammonium Sulphate: Harmful to aquatic organisms. Increases in pH above 7.5 will lead to an increased load of non-ionised ammonia which is markedly more toxic to aquatic life.

## **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility

## **14. TRANSPORT INFORMATION**

### **14.1 UN classification**

Not classified ie considered non-hazardous material according to UN Orange Book and international transport codes e.g. RID (rail), ADR (road) and IMDG (sea).

## **15. REGULATORY INFORMATION**

### **15.1 EC Directives**

76/116/EEC (Relating to fertilisers)

### **15.2 National Regulations**

The Fertilisers Regulations 1991 and subsequent amendments.

## **16. OTHER INFORMATION**

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 FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA 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

## **PSDS GROUP 7 PRODUCT**

## **FMA PRODUCT SAFETY**

## **DATA SHEET - GROUP 7**

## **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

## **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

### **1.1Identification of the Product**

Products in Group 7 are solid compound fertilisers (NPK, NP, NK) Which are not based on ammonium nitrate.

### **1.2Company**

See details below

## **2.COMPOSITION/INFORMATION ON INGREDIENTS**

These products may contain some or all of the following ingredients. Ammonium sulphate, urea, mono and di-ammonium phosphate, normal (single) superphosphate, triple superphosphate, phosphate rock, potassium chloride (muriate of potash), potassium sulphate, calcium nitrate, ureaformaldehyde, inert fillers such as sand or limestone, and coating materials, such as oil, amine, clay or talc, secondary nutrients and/or micro-nutrients.

## **3. HAZARDS IDENTIFICATION**

### **3.1 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.

*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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

*Molten material:* Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious delayed lung effects.

### **3.2 Environment**

As this fertiliser contains phosphate, heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters. See Section 12.

## **4. FIRST AID MEASURES**

### **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. 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.

### **Fire and Thermal Decomposition Products**

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

## **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:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.
2. Call the fire brigade.
3. Use plenty of water.
4. Open doors and windows to give maximum ventilation.
5. **Do not** allow molten fertiliser to run into drains.

If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## **6. ACCIDENTAL RELEASE MEASURES**

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container

## **7. HANDLING AND STORAGE**

*7.1 Handling:* Avoid excessive generation of dust. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. Buildings used for storage should be dry and well ventilated, stacks therein should be at least 1 metre from walls, eaves and beams. Further storage guidance is given in HSE Guidance IND(G)230L.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

### 8.1 Occupational exposure limits

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### 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.

## 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.
Bulk density	Normally between 900-1100kg/m <sup>3</sup> .
Solubility in water	Soluble in water, extent depends on composition
	Most formulations are hygroscopic.

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 General

See Section 3.1.

### 11.2 Toxicity Data

Product toxicity will depend on the composition.

Ammonium sulphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Monoammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Diammonium phosphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Potassium chloride or sulphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

Calcium nitrate:

LD<sub>50</sub> (oral, rat) 2100mg/kg

## **12. ECOLOGICAL INFORMATION**

### **12.1 Mobility**

Very soluble in water. The ammonium ion is adsorbed by soil.

### **12.2 Persistence/Degradability**

The ammonium ion is adsorbed by soil particles. 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.

### **12.3 Bio-accumulation**

The product does not show any bio-accumulation phenomena.

### **12.4 Ecotoxicity**

Low toxicity to aquatic life.

## **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

## **14. TRANSPORT INFORMATION**

### **14.1 UN classification**

Classified as non-hazardous.

## **15. REGULATORY INFORMATION**

## **15.1 EC Directives**

76/116/EEC (Relating to fertilisers)

## **15.2 National Regulations**

The Fertilisers Regulations 1991 and subsequent amendments.

## **16. OTHER INFORMATION**

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 FMA's knowledge correct as at the date of publication.

Neither the FMA nor the Manufacturer, UKASTA 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

## **PSDS GROUP 8 PRODUCT**

### **FMA PRODUCT SAFETY**

### **DATA SHEET - GROUP 8**

## **0. INTRODUCTION**

This Product Safety Data Sheet applies exclusively to products manufactured or marketed by members of the Fertiliser Manufacturers Association. 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:

## **1.IDENTIFICATION OF THE PRODUCT AND THE COMPANY**

### **1.1Identification of the Product**

Products in Group 8 are solid fertilisers which do not contain nitrogen (PK, P, K).

### **1.2Company**

See details below

## **2.COMPOSITION/INFORMATION ON INGREDIENTS**

These products may contain some or all of the following ingredients. Normal (single) superphosphate, triple superphosphate, phosphate rock, potassium chloride (muriate of potash), potassium sulphate, inert fillers such as sand or limestone, and coating materials, such as oil, amine, clay or talc., secondary nutrients and/or micro-nutrients.

### **3. HAZARDS IDENTIFICATION**

#### **3.1 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.

*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<sup>3</sup> as an 8 hour Time Weighted Average. See HSE Guidance Notes EH 40 and HSG 173.

*Molten material:* Will cause burns and inhalation of decomposition gases (eg in a fire) may cause serious lung effects.

#### **3.2 Environment**

As this fertiliser contains phosphate, heavy spillage may cause adverse environmental impact such as eutrophication in confined surface waters. See Section 12.

### **4. FIRST AID MEASURES**

#### **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. 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.

#### **Fire and Thermal Decomposition Products**

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

*Inhalation:* remove from source of exposure to fumes. Keep warm and at rest.

### **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:-

1. Avoid breathing the fumes. Wherever possible wear an approved breathing mask when fighting a fire or when fumes are being emitted.
2. Call the fire brigade.
3. Use plenty of water.
4. Open doors and windows to give maximum ventilation.
5. **Do not** allow molten fertiliser to run into drains.

If water containing the fertiliser enters any drain or water course, inform the appropriate water authorities immediately.

Note also first aid precautions (4).

## **6. ACCIDENTAL RELEASE MEASURES**

Clean up spillage promptly. Sweep up and place in a clean appropriately labelled container

## **7. HANDLING AND STORAGE**

*7.1 Handling:* Avoid excessive generation of dust. Avoid unnecessary exposure to the atmosphere to prevent moisture pick-up.

*7.2 Storage:* The basic requirements are the avoidance of involvement in a fire and 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 hay, grain, diesel, etc. Ensure high standard of house-keeping in the storage areas. **Do not** permit smoking or the use of naked lights in the storage area. Buildings used for storage should be dry and well ventilated, stacks therein should be at least 1 metre from walls, eaves and beams. Further storage guidance is given in HSE Guidance IND(G)230L.

## **8. EXPOSURE CONTROL/PERSONAL PROTECTION**

### **8.1 Occupational exposure limits**

No specific official limits

ACGIH recommended value (1995-1996) for inhalable particulate: TLV/TWA 10mg/m<sup>3</sup>.

### **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.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White grey or brown granules crystals or Powder.
Odour	Odourless.
pH water solution (100g/l)	Usually > 4.5.
Bulk density	Normally between 900-1100kg/m <sup>3</sup> .
Solubility in water	Partially soluble in water, extent depends on composition
	Most formulations are hygroscopic.

## 10. STABILITY AND REACTIVITY

Stable under normal storage and handling conditions Liberates ammonia when in contact with alkalies eg Caustic Soda, Soda Ash.

**Do not** weld or apply heat to equipment or plant which may have contained the fertiliser without first washing thoroughly to remove **all** fertiliser.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 General

See Section 3.1.

### 11.2 Toxicity Data

Product toxicity will depend on the composition.

Potassium chloride or sulphate:

LD<sub>50</sub> (oral, rat) > 2000mg/kg

## 12. ECOLOGICAL INFORMATION

### 12.1 Mobility

Partially soluble in water.

### 12.2 Persistence/Degradability

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.

### 12.3 Bio-accumulation

The product does not show any bio-accumulation phenomena.

### 12.4 Ecotoxicity

Low toxicity to aquatic life.

### **13. DISPOSAL CONSIDERATIONS**

Depending on the degree of contamination, dispose of by use on farm, by spreading thinly on open ground or to an authorised waste facility. Take care to avoid the contamination of watercourses and drains. Inform the appropriate water authority in the event of accidental watercourse contamination.

### **14. TRANSPORT INFORMATION**

#### **14.1 UN classification**

Classified as non-hazardous.

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### **16. OTHER INFORMATION**

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 FMA's knowledge correct as at the date of publication.

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