

IRISH INDUSTRIAL EXPLOSIVES	MATERIAL SAFETY DATA SHEET	DATE	07/10
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1. PRODUCT AND COMPANY IDENTIFICATION

Product Type: Ammonium Nitrate / Fuel Oil (ANFO) mixtures.

Trade Names: Ammogex

Product Description: A mixture of ammonium nitrate prills and gas oil. The product is an explosive used as a column charge in blasting

**Manufacturer/
Supplier:** IRISH INDUSTRIAL EXPLOSIVES LTD

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2. HAZARD IDENTIFICATION

Main Hazards: **EXPLOSIVE:** mass explosion hazard. Risk of explosion by shock, fire or other sources of ignition. Once detonated, explosives release large quantities of gas. If in a confined area, care should be taken to ensure that there is sufficient oxygen in the air before approaching the site of an explosion. The gases released may contain some carbon monoxide -**TOXIC (T)** - nitrogen monoxide and nitrogen dioxide - **VERY TOXIC (T+)**.

Health Effects – Eyes: May cause irritation.

Health Effects – Skin: May cause irritation. **CARCINOGENIC CAT 3 (X_n):** The product may contain polycyclic aromatic hydrocarbons, some of which are skin carcinogens in animals. The risk is very low if prolonged and repeated skin contact is avoided.

Health Effects – Ingestion: Small quantities unlikely to cause toxic effects. In larger 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).

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Environmental Effects: Heavy spillage may cause adverse environmental impact from the ammonium nitrate such as eutrophication in confined surface waters or nitrate contamination of ground or surface water. Studies on gas oils indicate toxicity to invertebrates and slight toxicity to fish.

3. COMPOSITION/INFORMATION ON THE COMPONENTS

Name	Concentration	EINECS / EC Number	CAS Number	Hazard
Ammonium Nitrate	92.5-95.0%	229-347-8	6484-52-2	O
Gas Oil /Diesel fuel	5.0-7.5%	269-822-7	27247-96-7	Xn, Carc Cat 3:R40 R51/53

Gas oil /diesel fuel may contain small quantities of flow improver, cetane improver, dye / chemical marker, and fatty acid methyl ester.

4. FIRST AID MEASURES

First Aid – Eyes: Irrigate thoroughly with water for at least 15 minutes. If irritation persists seek medical advice.

First Aid – Skin: Wash thoroughly with soap and water.

First Aid – Ingestion: Wash mouth with water and after drink plenty of milk and water. Seek medical advice.

First Aid –Inhalation: Remove to well ventilated area. If problems persist, seek medical advice.
A person suffering from inhalation of after detonation fumes must be removed to fresh air, receive medical attention and stay under medical observation for at least 48 hours. The person should lie down until the doctor arrives.

Advice to Physicians: **Eyes** - Continue irrigation treatment as for chemical burns.
Ingestion - Mild cases of methaemoglobinaemia will lead to cyanosis and in more severe cases may produce unconsciousness. After measuring the methaeglobin level, if cyanosis is present, inject 0.1-0.2 ml/kg body weight 1% methylene blue injection USP very slowly over several minutes. A more rapid injection rate leads to the formation of additional methaemoglobin. Repeat methaemoglobin measurement and repeat methylene blue injection depending on results.

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5. FIRE FIGHTING MEASURES

Extinguishing Media: Use water based extinguishers to prevent fire reaching the ANFO.

Special Hazards of Product: Explosive - may burn to detonation. If the fire looks likely to reach the ANFO retire to a safe distance and cordon off the area. A minimum distance of 300 m is recommended and a greater distance may be required depending on the quantity of explosives. **DO NOT** attempt to fight a fire engulfing the ANFO.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear gloves and overalls.

Environmental Precautions: Do not allow to enter a water course.

Spillages: Be careful to avoid shock, friction, and contact with grit. Avoid the use of metal tools containing iron and/or copper. Collect product for recovery or disposal and wash contaminated area with water.

Prevent access by unauthorised persons.

7. HANDLING AND STORAGE

Handling: Keep away from heat/sparks/open flames/hot surfaces. — No smoking. - no sources of ignition. Keep product clean and free from contamination.

Storage: Must be stored in accordance with the Explosives Act of 1875. Handle cases with care. Do not open cases in magazines or whilst in transit or when loading or unloading from vehicles. Keep the product clean and free from contamination.

Do not store in damp or humid conditions. Avoid thermal cycling. Keep bags closed prior to use. The shelf life of the explosive is 12 months when stored under recommended conditions.

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8. EXPOSURE CONTROL / PERSONAL PROTECTION

Occupational Exposure Standards

	8-hour TWA	STEL
Mineral oil mist	5 mgm ⁻³	10 mgm ⁻³
Ammonium Nitrate (nuisance dust level)	10 mgm ⁻³	

Note, after detonation fumes will contain carbon dioxide, carbon monoxide and oxides of nitrogen

Hand Protection: Wear suitable gloves. Suitable gloves include nitrile, neoprene, PVC

Body Protection: Wear overalls.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid.

Colour: Slightly pink granules

Odour: Slight diesel smell.

pH: 10% solution will have a pH of 4.5-7.

Flash Point: The flash point of the oil in the ANFO is > 55°C.

Solubility in Water (kg/m³): Mostly soluble, leaving the oil and additives in the ammonium nitrate to float.

Density (kg/m³): ca 800.

Decomposition Temp. (deg C): > 150 ° C.

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions. As an explosive it is detonable under the right conditions.

Conditions to Avoid: High temperatures, impact, friction, flames, sparks and static discharge.

Materials to Avoid: Copper and its alloys, bromates, chlorates, chlorites,

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hypochlorites, nitrites, perchlorates, permanganates, powdered metals, acids and bases.

**Hazardous
Decomposition
Products:**

Nitrogen Oxides, Oxides of Carbon, including Carbon Monoxide may be produced when the product is used. However the amounts of toxic gases produced will depend on many variables such as method of initiation, rock type, humidity etc.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

	<i>LD₅₀ Oral</i>	<i>LD₅₀ Dermal</i>	<i>LC₅₀ Inhalation</i>
Ammonium Nitrate	2217 mg/kg (rat)		
Gas Oil	>5000 mg/kg	>2000 mg/kg	

Eyes: Mildly irritant.

Skin: Mildly irritant, low order of acute toxicity. Prolonged or repeated contact with the oil may lead to more serious skin disorders including skin cancer.

Inhalation: Inhalation of the oil vapour or mist in high concentrations is irritating to the mucous membranes, and may cause headaches and dizziness.

Skin Sensitisation: May sensitise skin to other chemicals.

12. ECOLOGICAL INFORMATION

Mobility: Free flowing prills - pourable. The ammonium nitrate dissolves readily in water. The gas oil has some mobility in soil.

Persistence/Degradability: The ammonium nitrate follows the natural nitrification/denitrification cycle.
For the gas oil hydrocarbon components are degraded by micro-organisms. Light components volatilise and in air undergo photolysis. Photoxidation of oil on the liquid surface also contributes to the loss process. Adsorbed oils will degrade slowly. Gas oils have a tendency to bio-accumulate.

13. DISPOSAL

Product Disposal: Under the supervision of an expert, the product may be destroyed by detonation in a borehole or by burning at an approved site. Dissolving is also a possibility. For more guidance see the Irish Industrial Explosives Guidelines provided on the reverse of each delivery docket.

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Container Disposal: The accepted method for destroying empty boxes is burning.

14. TRANSPORT INFORMATION

Irish Transport Information: Must be in accordance with the Carriage of Dangerous Goods by Road Regulations 2007 SI288. These are aligned with ADR, but may have additional requirements /modifications.

UN Number : 0082.

UN Class : 1.1 D.

ADR/RID/IMDG name: **EXPLOSIVE, BLASTING, TYPE B**

15. REGULATORY INFORMATION

Irish Legislation: Labelled in accordance with CPL regulations S.I No 116 of 2003 (substances) and S.I No 62 of 2004 (preparations), as amended and the Carriage of Dangerous Goods by Road Regulations 2007.

Irish Legislation continued: Carriage of Dangerous Goods by Road Regulations S.I. 288 of 2007. Explosives Act 1875. Quarries Regulations Safety, Health and Welfare at Work (Quarries) Regulations (2008)

EC Regulations: Registration, Evaluation, Authorisation and Restriction of Chemicals, EC Reg 1907/2006.
Classification, Labelling and Packaging of Substances and Mixtures, EC Reg 1272/2008.
Note this does not apply to mixtures until June 2015, as such this data sheet does not show the labelling requirements under this reg.

CHIP Classification: E, X_n Carcinogenic Cat 3, N

Risk and Safety Phrases:
R phrases: R2, R40, R52/53
S Phrases: S35, S36/37

16. OTHER INFORMATION

MSDS first issued: 03/96
This issue is an update modifying all of the document.

Meaning of R & S phrases:
R2: Risk of explosion by shock, friction fire or other sources of ignition
R40: Limited evidence of a carcinogenic effect

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- R51/53: Toxic to aquatic organisms, may cause long term adverse affects in the aquatic environment
- R52/53: Harmful to aquatic organisms, may cause long term adverse affects in the aquatic environment
- S35: This material and its container must be disposed of in a safe way.
- S36/37: Wear suitable protective clothing and gloves

Notice: **FOR FURTHER INFORMATION CONTACT IRISH INDUSTRIAL
EXPLOSIVES CUSTOMERS SERVICES DEPARTMENT**
