



Safety Data Sheet AMMOGEX (ANFO)

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1.1. Product identifier

Product name / Designation	AMMOGEX /AMMONIUM-NITRATE-FUEL-OIL (ANFO)
Chemical Description	Mixture
CAS number	Not applicable
EC number	Not applicable

1.2. Relevant identified uses of the substance and uses advised against

Relevant identified uses	The product is generally used in civil excavation and demolition work and in the mining industry. It is also used for extracting blocks in the stone industry, and so on.
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1.3. Details of the supplier of the safety data sheet

Name	Irish Industrial Explosives Ltd.,
Address	Clonagh, Enfield, Co. Meath
Telephone	+353 46 954 1086
Fax	+353 46 954 1383
Contact email	pgill@kemek.ie

1.4. Emergency telephone number

Telephone	+ 353 86 780 5119
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2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or the mixture

2.1.1. Classification of the mixture according to DPD (1999/45/EC)

E; Explosive	R2 Risk of explosion by shock, friction, fire or other sources of ignition.
Xi, Irritant	R36 Irritating to eyes

2.1.2. Classification of the mixture according to CLP (1272/2008/EC)

Eye Irrit. 2	H319 Causes serious eye irritation.
Expl. 1.1	H201 Explosive; mass explosion hazard.



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2.2. Label elements according to the regulation (EC) n° 1272/2008 (CLP)

Hazard pictograms



Signal word

Danger

Hazard statements

H319 Causes serious eye irritation.
H201 Explosive; mass explosion hazard.

Precautionary statements-
Prevention

P210 Keep away from heat/ sparks/open flames/hot surfaces. — No smoking.
P280 Wear protective gloves/protective clothing/eye protection/ face protection.

Precautionary statements-
Intervention

P372 Explosion risk in case of fire.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.

Precautionary statements-
Storage

P401 Store in a safe and suitable place in accordance with legal requirements.

Precautionary statements-
Disposal

P501 Dispose of contents/container Dispose of the product/container in accordance with local regulations on the disposal of explosive and contaminated waste.

Supplemental Hazard information -

2.3. Other hazards

May cause explosion or fire if handled improperly



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3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS-Nr.	EC-Nr.	Index-Nr.	Concentration	Classification DSD/CLP	Specific concentration limits
Ammonium nitrate	6484-52-2	229-347-8	-	>70 ≤ 97.2	Eye Irrit. 2 H319	-
					Oxid. Solid 3 H272	
					Xi; R36	
					O; R8	
Fuels, diesel*	68334-30-5	269-822-7	649-224-00-6	< 10	Carc. 2 H351	-
					Carc. Cat. 3; R40	
Distillates (petroleum), hydrotreated light	64742-47-8	265-149-8	649-422-00-2	≤ 6	Asp Tox 1 H304	-
					Xn; R65	

*Note N: The classification as a carcinogen need not apply if the full refining history is known and it can be shown that the substance from which it is produced is not a carcinogen. This Note applies only to certain complex oil-derived substances in Part 3.

4. FIRST AID MEASURES

4.1. Description of first aid measures

General descriptions	Call a POISON CENTER or doctor/physician if you feel unwell.
After inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Perform artificial respiration if breathing has stopped. Get medical attention.
After skin contact	Wash the affected areas thoroughly with soap and plenty of water or decontaminate with acetone or 10% of sodium sulfate. If skin irritation persists: Get medical advice/attention.
After eye contact	Rinse thoroughly with water for at least 15 minutes. Remove contact lenses if present and easy to do – continue rinsing. If eye irritation persists, consult an ophthalmologist.
After ingestion	DO NOT INDUCE VOMITING. If conscious, give some water. Get medical attention if persistence.

4.2. Most important symptoms and effects, both acute and delayed

Eye contact	After eye contact, a serious eye irritation is likely to occur.
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Skin contact	After skin contact, a skin and mucous membranes' irritation may occur. A continuous contact with skin may lead to sensitization.
Inhalation	ANFO can be toxic if inhaled. The symptoms can be headache, nausea and sleep disorders.
Ingestion	ANFO can be toxic if ingested. The symptoms can be headache, nausea and sleep disorders.

4.3. Indication of immediate medical attention and special treatment

Treat symptomatically

5. FIREFIGHTING MEASURES

5.1. Extinguishing media	<u>Appropriate</u> : Large quantities of water must be used to cool and protect exposed material. <u>Inappropriate</u> : not determined
5.2. Special hazards arising from the substance or mixture	If the product is enveloped in flames, there is an immediate risk of explosion, so evacuate as quickly as possible, to at least 300 meters from the flames, and if possible seek shelter behind a natural or artificial barrier. Product combustion generates toxic fumes and gases, mainly carbon monoxide and nitrous fumes.
5.3. Advice for firefighters	If the flames do not involve the product directly, extinguish them using the media recommended for the specific type of fire. Move the product away from the fire if possible. If the fire directly involves the product, evacuate the area immediately to an upwind position to avoid breathing the fumes. There is an explosion risk so in case of fire so DO NOT fight fire when it reaches explosives. Only if possible, fight the fire from a protected position, wearing self-contained breathing apparatus and using large quantities of water.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures	Personal Protective Equipment must be worn. Gather the dispersed product using rigorously anti-sparking tools and equipment (wood, Plastic...). Eliminate all potential sources of ignition and avoid any action that could cause an impact, friction, sparking or a sudden rise in temperature.
6.2. Environmental precautions	Do not let the product get into the soil and water. Call the fire brigade if soil or water is contaminated.
6.3. Methods and material for containment and cleaning up	Place the product in a suitable container, preferably a cardboard box or canister that can be sealed after removal of the product. Never use tools that generate sparks.



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Keep anyone not involved in the operation well away from the danger area and inform them of the risk of explosion.
Contamination may increase the explosive's sensitivity to impact and friction.

6.4. Reference to other sections

Refer to sections 7, 8 and 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Handle with care, bearing in mind the potential hazards.
Earth all electrical equipment present and any conductive item.
Keep the product well away from heat, direct sunlight and other sources of ignition, including combustible materials.
When handling the product, avoid ingesting or inhaling any solid particles that are formed. Do not eat, drink or smoke when handling the product.
Wear disposable plastic, latex or rubber gloves to prevent contact with the skin.
Wash your hands thoroughly after handling the product
Remove contaminated clothes and PPE before entering areas where food and drink are consumed.

7.2. Conditions for safe storage, including any incompatibilities

Store only in authorized areas that are suitable for the purpose.
Take measures to avoid the generation and accumulation of electrostatic charges.
Keep the storage areas closed.

All explosives and explosive items are chemically incompatible with acids, alkalis and highly reactive materials such as reducing agents and highly oxidizing agents.

Explosives and explosive items are physically incompatible with moisture, nitrophenols and materials other than powder that can penetrate the explosive and alter its characteristics.

Combinations with phosphorous, ammonium, amines, metal powders, chlorates, mercury, and organic compounds or solvents must be avoided.

7.3. Specific end use(s)

The product is supplied for use, testing and analysis by qualified personnel who have been fully trained to handle explosives.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

None



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8.2. Exposure controls

Appropriate engineering controls	Provide appropriate exhaust ventilation at places where dust is formed.
Personal protective equipment	<p><u>Eye/face protection</u>: safety goggles are required in the presence of large amounts of powder during handling.</p> <p><u>Hand protection</u>: wear plastic, rubber or latex gloves. Disposable gloves are recommended to minimize cross-contamination with the explosive.</p> <p><u>Body protection</u>: the entire skin must be covered by suitable clothing. Any powder contaminating the skin must be removed immediately by washing in plenty of water. Work clothes must be antistatic, made of cotton for instance, and flame retardant.</p> <p><u>Respiratory protection</u>: not required during normal handling.</p> <p><u>Hygiene measures</u>: Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid contact with eyes, skin and clothing. Wash contaminated clothes before reuse.</p> <p><u>Other</u>: use appropriate anti-static footwear</p>
Environmental exposure controls	Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information of basic physical and chemical properties

- Physical state:	homogeneous prilled pulverulent (contained in a polyethylene cartridge)
- Colour	Not available
- Odour	Characteristic of fuel oil
- Odour threshold	Not available
- pH	Not available
- Melting point / range	-10°C – 50°C (Freezing point)
- Boiling point / range	Not available
- Flashpoint	>100°C
- Evaporation rate	Not available
- Auto-ignition temperature	229°C



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- Flammability	Not available
- Upper/Lower flammability or explosive limits	Not available
- Vapour pressure	Not available
- Vapor density	Not available
- Gravimetric density	0.80-0.85 g/cm ³
- Packing density	0.85-0.90 g/cm ³
- Relative density	0.70-0.75 g/cm ³
- Water solubility	Soluble
- Other solvents	Not available
- Partition coefficient n-Octanol/Water (log P _{o/w})	Not available
- Decomposition temperature	Not available
- Viscosity	Not available
- Explosion properties	Explosion distance: 2 cm Detonation rate: 3000-3300 m/s. Explosion temperature: 2029 °C. Detonation pressure: 4060 MPa Ignition sensitivity: detonator no. 8
- Oxidizing properties	Not available

9.2. Other information

Not available

10. STABILITY AND REACTIVITY

10.1. Reactivity

Impact, friction, electrostatic discharge, excessive temperature rise, naked flames and other causes of ignition can cause explosion.
Fire can lead to explosion.



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10.2. Chemical stability	Stable under the recommended storage and use conditions and at moderately elevated temperatures and pressures. German assay at 120°C with methyl violet. No variation after 2h 30'.
10.3. Possibility of hazardous reactions	When the product is exposed to heat, there is a risk for explosion at temperatures well below the auto-ignition temperature.
10.4. Conditions to avoid	Keep away from heat, sparks, naked flames and hot surfaces. Do not smoke. Avoid scratching, impact, shock and friction.
10.5. Incompatible materials	All explosives and explosive devices are chemically incompatible with acids, alkalis and highly reactive materials such as reducing agents and highly oxidizing agents. Explosives and explosive devices are physically incompatible with nitrophenols and materials other than powder that can sensitize the explosive and lead to an uncontrollable reaction. Combinations with phosphorous, ammonium, amines, metal powders, chlorates, mercury, and organic compounds or solvents must be avoided.
10.6. Hazardous decomposition materials	Nitrous fumes and carbon monoxide during combustion.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Toxicity	ANFO is toxic when inhaled or ingested. Exposure to the product by ingestion or inhalation can generate acute or chronic symptoms such as headache, nausea and sleep disorders.
Skin corrosion/irritation	Prolonged and repeated contacts can irritate the skin.
Serious eye damage/irritation	Powder in the eyes can cause considerable discomfort and lacrimation. Can cause sleep disorder, irritation, sensitization and epileptic convulsions. May persist for several days.
Sensitisation	Inhalation and continuous skin contact may lead to sensitization.
STOT-repeated exposure	Not available
Germ cell mutagenicity	Not available
Carcinogenicity	Not available
Reproductive toxicity	Not available
STOT-single exposure	Not available
Aspiration hazard	Not available



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11.2. Other information

Respiratory irritation

The powder irritates the airways and can cause sneezing and coughing. Large quantities can cause headache, lack of appetite, malaise, vomiting, dizziness, fluctuations in blood pressure and fainting.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Environmental dispersion causes severe ecological impacts because the product contains ammonium nitrate, which is highly soluble in water, leading to eutrophication of algae.

Aquatic toxicity of Ammonium nitrate

<i>Fish</i>	LC50 24h	650 mg/L
<i>Daphnia</i>	IC50 24h	340 mg/L
<i>Algae</i>	LC50 5j	2.5 mg/L

12.2. Persistence and degradability

Not available

12.3. Bioaccumulation potential

Not available

12.4. Mobility in the soil

Not available

12.5. Results of PBT and vPvB assessment

Not available

12.6. Other adverse effects

Not available

12.7. Additional information

Not available

13. DISPOSAL CONSIDERATIONS

Considering the potential risk associated with the kind of product, it must only be disposed by personnel specifically trained for the purpose.

13.1. Waste treatment methods

Avoid or reduce the generation of waste to a minimum.
Collect waste in appropriate containers in accordance with the applicable regulations, ready for disposal using approved methods.




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The buildings where containers of waste are kept must be properly equipped and authorized by the competent authorities.
Waste must never be discharged into the drains or waterways.
Packaging must be destroyed or recycled at an authorized waste treatment center, in accordance with the applicable regulations.

13.2. Waste code numbers Not available

14. TRANSPORT INFORMATION

	Overland transport (ADR/RID)	River transport (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI / IATA-DGR)
14.1. UN Number	0082			Forbidden
14.2. UN proper shipping name	MINE EXPLOSIVE TYPE B.			Forbidden
14.3. Transport hazard classes	1			Forbidden
14.4. Packing group	-			Forbidden
14.5. Environmental hazards	-			Forbidden
14.6. Classification	0082 MINE EXPLOSIVE TYPE B ; 1			Forbidden
14.7. Classification code	1.1 D			Forbidden
14.8. Label				Forbidden
14.9. Limited Quantity (LQ)	-			Forbidden
14.10. Additional information	-	-	EMS number: F-B, S-Y	

14.11. Special precautions for user

Not available

14.12. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not available



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15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- Regulation (EC) no. 453/2010 of the Commission of 20th May 2010, amending regulation (EC) no. 1907/2006 REACH.
- Regulation (EC) no. 1272/2008 of the European Parliament and Council, of 16th December 2008, amending regulation (EC) no. 1907/2006 REACH;
- Regulation (EC) no. 1907/2006 of the European Parliament and Council of 18th December 2006, concerning REACH;
- Directive no. 1999/48/EEC of the European Parliament and Council of 31st May 1999 on the classification, packaging and labelling of dangerous substances.
- Directive no. 67/548/EEC of the Council of 27th June 1967 on the classification, packaging and labelling of dangerous substances.
- Ministerial Decree no. 08/04/2008 "Special restrictions on the marketing and transportation of explosive materials", as amended;
- Recommendations on the Transport of Dangerous Goods (UN).
- ADR "European Agreement regarding the International Carriage of Dangerous Goods by Road".
- RID "European Agreement regarding the International Carriage of Dangerous Goods by Rail".
- IMO/IMDG "International Maritime Transport of Dangerous Goods (sea)".
- ADN "European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways".
- IATA/ICAO "Technical Instructions for the International Carriage of Dangerous Goods by Air".
- All official applicable texts regarding legal requirements for this product category.

15.2. Chemical safety assessment

Not available



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16. OTHER INFORMATION

16.1. Indication on the revision

Revision of the SDS on the 26th of May 2014 in conformity with Reach regulation 1907/2006 (EC)

16.2. Abbreviations and acronyms

ADN/ADNR: Regulations concerning the transport of dangerous substances in barges on inland waterways.

ADR/RID: European Agreement concerns the International Carriage of Dangerous Goods by Road/ Regulations concerning the international carriage of dangerous goods by rail.

ANSI: American National Standards Institute

CAS N°.: Chemical Abstract Service Number

CFR: Code of Federal Regulations

CLP: Classification, Labeling and Packaging

DSD: Dangerous Substance Directive

DPD: Dangerous Preparation Directive

EC No.: European Commission Number

IATA: International Air Transport Associations

IMDG: International Maritime Dangerous Goods code

NFPA: National Fire Protection Association

PBT: Persistent, Bioaccumulative, Toxic

RCRA: The Resource Conservation and Recovery Act

UN N°.: United Nations Number

UVCB: Substances of Unknown or Variable composition, Complex reaction products or Biological materials

vPvB: very Persistent and very Bioaccumulative

WHMIS: Workplace Hazardous Materials Information System

16.3. Key literature references and sources for data

Registration files available on the ECHA website: <http://echa.europa.eu/web/guest/information-on-chemicals/registered-substances> :CAS# 6484-52-2.

16.4. Classification of mixtures and applied evaluation method

Not applicable



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16.5. Wording of the R- and H- phrases (which are not written in full under section 2 to 15)

Risk phrases:

- R8 Contact with combustible material may cause fire
- R11 Highly flammable
- R15 Contact with water liberates extremely flammable gases
- R36 Irritating to eyes
- R40 Limited evidence of a carcinogenic effect
- R42 May cause sensitisation by inhalation

H statements:

- H228 Flammable solid
- H261 In contact with water releases flammable gas
- H272 May intensify fire; oxidizer
- H304 May be fatal if swallowed and enters airways
- H351 Suspected of causing cancer

16.6. Training advice

Unavailable

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. By using suitable industrial safety precautions, it is paramount to make sure that the relevant exposition measures at the work place are adhered to, and negative health effects are avoided.