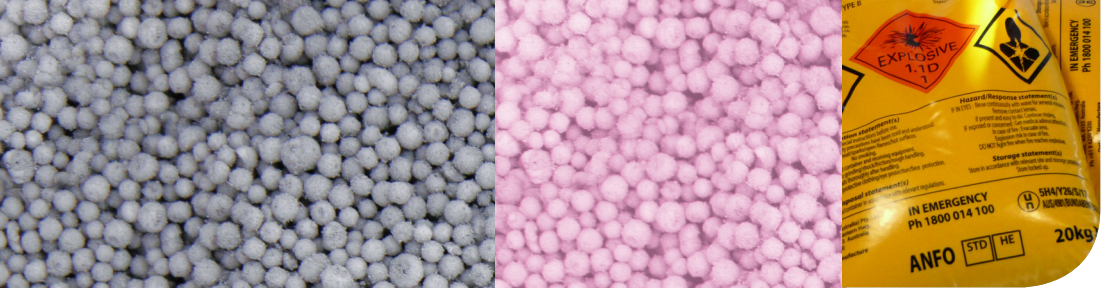

JOHNEX explosives

SAFETY DATA SHEET ANFO, ANFO HE, ANFO LF, STOPE CHARGE

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier
Product name: ANFO, ANFO HE, ANFO LF
Synonym(s): ANFO (AMMONIUM NITRATE FUEL OIL) • ANFO HE • ANFO HE110 • ANFO HE 115 • ANFO HE 120 • ANFO LF • STOPE CHARGE

1.2 Uses and uses advised against
Use(s): EXPLOSIVES • MINING EXPLOSIVE

1.3 Details of the supplier of the product
Supplier name: JOHNSON HI-TECH (AUSTRALIA) PTY LTD
Address: Level 1, 63 Abernethy Road, Belmont WA 6104 AUSTRALIA
Telephone: +61 8 6250 8200
Fax: +61 8 9473 2379
Email: info@johnex.com.au
Website: www.johnex.com.au

1.4 Emergency telephone number(s)
Emergency: 1800 014 100

SDS Date: 18 Jan 2021

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
CLASSIFIED AS HAZARDOUS ACCORDING TO AUSTRALIAN WHS REGULATIONS
GHS classification(s): Explosives: Division 1.1
Serious Eye Damage / Eye Irritation: Category 2A
Carcinogenicity: Category 2

2.2 Label elements
Signal word: DANGER
Pictogram(s):

Hazard statement(s)

H201	Explosive; mass explosion hazard.
H319	Causes serious eye irritation.
H351	Suspected of causing cancer.

Prevention statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240	Ground/bond container and receiving equipment.
P250	Do not subject to grinding/shock/friction/rough handling.
P264	Wash thoroughly after handling.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response statement(s)

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P370 + P380	In case of fire: Evacuate area.
P372	Explosion risk in case of fire.
P373	DO NOT fight fire when fire reaches explosives.

Storage statement(s)

P401	Store in accordance with relevant site and storage provisions.
P405	Store locked up.

Disposal statement(s)

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other hazards
No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS Number	EC Number	Content
AMMONIUM NITRATE	6484-52-2	229-347-8	<94%
ALUMINIUM	7429-90-5	231-072-3	<20%
INERT MINERAL(S)	-	-	<15%
DIESEL FUEL NO. 2	68476-34-6	270-676-1	<7%
ZINC OXIDE	1314-13-2	215-222-5	<5%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye	If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centrre, a doctor, or for at least 15 minutes.
Inhalation	If inhaled, remove from contaminated area. To protect rescuer, use an Air-line respirator where an inhalation risk exists. Apply artificial respiration if not breathing
Skin	Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.
Ingestion	For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting.
First aid facilities	Eye wash facilities and safety shower should be available.

4.2 Most important symptoms and effects, both acute and delayed
See Section 11 for more detailed information on health effects and symptoms.

4.3 Immediate medical attention and special treatment needed
Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
DO NOT attempt to extinguish burning explosives. Evacuate area immediately. Notify trained emergency response personnel.

5.2 Special hazards arising from the substance or mixture
EXPLOSIVE. Will explode under specific conditions. May evolve toxic gases (carbon/ nitrogen oxides, hydrocarbons) when heated to decomposition. Eliminate all ignition sources including cigarettes, open flames, spark producing switches/tools, heaters, naked lights, pilot lights, etc when handling. CAUTION: Will explode if exposed to heat or with heavy impact.

5.3 Advice for firefighters
Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Do not attempt to fight fire. Use waterfog to cool intact containers and nearby storage areas. May explode from heat, pressure, friction or shock.

5.4 Hazchem code
E Evacuation of people in and around the immediate vicinity of the incident should be considered.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. CAUTION: Heating, impact or static charge may cause explosion.

6.2 Environmental precautions
Prevent product from entering drains and waterways.

6.3 Methods of cleaning up
Explosive Material. Do not clean-up or dispose except under supervision of a specialist. Contain spillage, collect and place in suitable containers for disposal in accordance with AS2187.2. Eliminate all sources of ignition.

6.4 Reference to other sections
See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities
Store in clean, well ventilated and dry magazine licensed for Class 1 Explosives. Segregate from all incompatible substances and foodstuffs. Ensure magazines are adequately labelled and protected from physical damage/shock or friction.

7.3 Specific end use(s)
No information provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Exposure standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Aluminium (metal dust)	SWA (AUS)	--	10	--	--
Zinc oxide (dust)	SWA (AUS)	--	10	--	--
Zinc oxide (fume)	SWA (AUS)	--	5	--	10

Biological limits
No biological limit values have been entered for this product.

8.2 Exposure controls
Engineering controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical explosion proof extraction ventilation is recommended.

PPE
Eye / Face Wear safety glasses.
Hands Wear PVC or rubber gloves.
Body Wear coveralls.
Respiratory If entering poorly ventilated or confined areas shortly after explosions wear self contained breathing apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	OFF-WHITE SOLID PRILLS
Odour	FUEL OIL ODOUR OR KEROSENE ODOUR
Flammability	EXPLOSIVE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	> 169°C
Evaporation rate	NOT AVAILABLE
pH	NOT AVAILABLE
Vapour density	NOT AVAILABLE
Specific gravity	0.7 to 1.10
Solubility (water)	95% SOLUBLE
Vapour pressure	NOT AVAILABLE
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	> 210°C
Viscosity	NOT AVAILABLE
Explosive properties	EXPLOSIVE; mass explosion hazard
Oxidising properties	NOT AVAILABLE
Odour threshold	NOT AVAILABLE

9.2 Other information

% Volatiles	< 8 %

10. STABILITY AND REACTIVITY

10.1 Reactivity
Carefully review all information provided in sections 10.2 to 10.6.

10.2 Chemical stability
Potential for exothermic hazard.

10.3 Possibility of hazardous reactions
Polymerization will not occur.

10.4 Conditions to avoid
Avoid shock, friction, heavy impact, heat, sparks, open flames and other ignition sources.

10.5 Incompatible materials
May detonate if heated strongly or exposed to severe shock. Incompatible (explosively) with acids (e.g. nitric acid), metal powders, combustible materials, alkalis (e.g. sodium hydroxide), oxidising agents (e.g. hypochlorites), chloride salts, sulphur, urea, nitrites and reducing agents.

10.6 Hazardous decomposition products
May evolve toxic gases (carbon/nitrogen oxides, hydrocarbons) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
Acute toxicity
Information available for the product: Based on available data, the classification criteria are not met. WARNING: May explode with shock, heat, friction or static charge. Serious damage may result from explosive fragments.

Information available for the ingredient(s):

Ingredient	Oral Toxicity (LD50)	Dermal Toxicity (LD50)	Inhalation Toxicity (LC50)
AMMONIUM NITRATE	2217 mg/kg (rat)	-	-
DIESEL FUEL NO. 2	5-15 g/kg diesel oil	-	-
ZINC OXIDE	7950 mg/kg (mouse)	-	2500 mg/m³ (mouse)

Skin Contact may result in irritation, redness, pain, rash and dermatitis.
Eye Contact may result in irritation, lacrimation, pain, blurred vision and redness.
Sensitisation Not classified as causing skin or respiratory sensitisation.
Mutagenicity Not classified as a mutagen.
Carcinogenicity Diesel fuels, distillate (light) is not classifiable as to its carcinogenicity to humans (IARC Group 3).
Reproductive Not classified as a reproductive toxin.
STOT – single exposure Over exposure may result in irritation of the nose and throat, coughing, nausea and headache. High level exposure may result in drowsiness, breathing difficulties and methaemoglobinemia (blood's oxygen-carrying capacity is reduced).
STOT – repeated exposure Not classified as causing organ damage from repeated exposure.
Aspiration Not classified as causing aspiration.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No information provided.

12.2 Persistence and degradability
No information provided.

12.3 Bioaccumulative potential
No information provided.

12.4 Mobility in soil
No information provided.

12.5 Other adverse effects
Ammonium nitrate is a nutrient in water. Spills can cause massive algal blooms in static waters and affect local species population balance in the aquatic environment. If water is used to disperse ammonium nitrate spilled on soil, the solution produced can end up in the groundwater. Ammonium nitrate will be taken up by bacteria. Nitrate is more persistent in water than the ammonium ion.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Waste disposal Waste must be disposed of in accordance with AS2187.2 as well as state regulatory and environmental legislation. Small quantities of damaged or deteriorated material may be destroyed by inclusion in a blast hole containing good explosives (by licensed personnel). Detonators should not be inserted into defective explosives. For large quantities, contact the manufacturer/supplier for additional information.
Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
14.1 UN Number	0082	0082	PROH
14.2 Proper Shipping Name	EXPLOSIVE, BLASTING, TYPE B	EXPLOSIVE, BLASTING, TYPE B	Air transport PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in passenger and cargo aircraft.
14.3 Transport Hazard Class	1.1D	1.1D	None Allocated
14.4 Packing Group	None Allocated	None Allocated	None Allocated

14.5 Environmental hazards
No information provided

14.6 Special precautions for user
Hazchem code E

EMS F-B, S-Y

Other information
AIR TRANSPORT PROHIBITED under the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air in passenger aircraft and cargo aircraft.

15. REGULATORY INFORMATION

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

Poison schedule	A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).
Classifications	Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals. The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].
Hazard codes	Carc. Carcinogen E Explosive Xi Irritant
Risk phrases	R2 Risk of explosion by shock, friction, fire or other sources of ignition. R36 Irritating to eyes. R40 Limited evidence of a carcinogenic effect.
Safety phrases	S16 Keep away from sources of ignition - No smoking. S36/37 Wear suitable protective clothing and gloves.
Inventory listing(s)	AUSTRALIA: AICS (Australian Inventory of Chemical Substances) All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional information
EXPLOSIVES & BLASTING AGENTS: Refer to Local State and Federal legislation that specifically relates to the use of Explosives. Users of products described in this ChemAlert Report are advised to ensure familiarity and compliance with the appropriate legal requirements (e.g. Regulations) prior to the use of this product. Where any further information is required, users may contact their local authority in Explosives and Dangerous Goods.
EXPLOSIONS: Fires involving explosives or explosive mixtures may undergo further explosions and rapid propagation. Police and emergency personnel should be notified immediately. Evacuate individuals to a safe sheltered area at least 800 metres away. If possible remove vehicles and further heat and ignition sources from the area. Do not return to areas until at least one hour after fire and explosions have ceased.
EXPLOSIVES - DETONATION: If explosives are detonated on stony ground or in an area where debris is likely to become missiles, damage can be expected within 400 metres when three kilograms of explosives are detonated. For this reason it is recommended that explosives should be detonated in sand or earth that is free from stones.
EXPLOSIVES - BURNING SAFETY: Note: Disposal in a blast with fresh explosives may be preferable to burning.
(a) Make a sawdust (or newspaper) trail 450mm wide and ~20mm deep in the direction of the wind. The trail should be 2m longer than necessary.
(b) Place the cartridges on the sawdust (or paper), they may be touching, but not piled on top of each other
(c) Individual trails should be no closer than 2m and should not contain more than 12kgs of explosives.
(d) Trails should be side by side, not in a line. No more than 4 should be set up at one time.
(e) Remove explosives not being burnt, to at least 300m away, unless the material can be stored behind something substantial.
(f) Thoroughly wet the trail with kerosene or diesel (never petrol or any other highly flammable liquid). Use at least 2L of fuel per 10m of trail.
(g) Light the trail from a long rolled paper wick, place down wind and contact the 2m of trail which is not covered by explosives. The flame should blow away from the unburned explosives otherwise preheating and detonation may occur.
(g) Use a plastic igniter if available instead of paper. Coil one end into the sawdust or under the paper and light the other end from a minimum distance of 7m away from the trail.
(h) Move away at least 300m. Do not return for a period of at least 30mins after burning has finished.
(j) If the fire goes out, do not approach for at least 15mins. Do not add kerosene or diesel oil unless certain that the flame is completely extinguished.
(k) Bury the residue as it is poisonous to livestock.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average